

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

In Re VALE S.A. SECURITIES LITIGATION

**CONSOLIDATED CLASS ACTION
COMPLAINT FOR VIOLATIONS OF
THE FEDERAL SECURITIES LAWS**

19-cv-526-RJD-SJB

JURY TRIAL DEMANDED

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“The first and most important conclusion is that it was not an accident . . . Vale management and the board knew the risks and decided to take them.”

- *Final Report of the Brazilian Senate Parliamentary Commission of Inquiry*

1. Colleges of Applied Arts and Technology Pension Plan (“Plaintiff” or “CAAT Pension Plan”), by and through its undersigned counsel, on behalf of itself and all others similarly situated, allege the following based upon the investigation by Plaintiff’s counsel, except as to allegations specifically pertaining to Plaintiff, which are based on personal knowledge. The investigation by counsel included, among other things: (i) review and analysis of the public filings with the U.S. Securities and Exchange Commission (“SEC”) by Vale S.A. (“Vale” or the “Company”); (ii) review and analysis of corporate press releases, disclosures and media reports issued and disseminated by Vale; (iii) review of other publicly available information concerning Vale, including transcripts of public investor presentations and conference calls; (iv) discussions with consultants; and (v) review and analysis of the trading data relating to the price and volume of Vale securities, including its American Depository Shares (“ADSs”) and certain notes. Plaintiff believes that substantial additional evidentiary support will exist for the allegations set forth herein after a reasonable opportunity for discovery.

I. PRELIMINARY STATEMENT

2. This is a securities class action brought under Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 (the “Exchange Act”), 15 U.S.C. §§ 78j(b) and 78t(a); and SEC Rule 10b-5, 17 C.F.R. § 240.10b-5 against Vale and certain of its most senior executives (the “Action”). The Action is brought on behalf of a class consisting of all persons who purchased on the New York Stock Exchange (“NYSE”) or other U.S. exchanges or in a U.S. transaction between July 28, 2016 and February 6, 2019, inclusive (the “Class Period”), any of the following publicly-traded Vale securities: (1) Vale ADSs, (2) 5.875% Guaranteed Notes due 2021, (3) 4.375%

Guaranteed Notes due 2022, (4) 6.250% Guaranteed Notes due 2026, (5) 8.250% Guaranteed Notes due 2034, (6) 6.875% Guaranteed Notes due 2036, (7) 6.875% Guaranteed Notes due 2039, or (8) 5.625% Notes due 2042 (collectively referred to hereafter as “Vale Securities”).

3. This action arises from the devastating collapse on January 25, 2019 at 12:28 P.M. local time of Dam 1 of Vale’s Córrego do Feijão iron ore mine near the town of Brumadinho in Minas Gerais, Brazil.¹ The torrent of mud unleashed by Dam 1 killed approximately 270 people (246 confirmed deaths and 24 people still missing), including employees and contractors of Vale, nearby townspeople, and tourists in the area. The Dam 1 failure also caused incalculable damage to the environment. Mining wastes destroyed hundreds of acres of forest and reached the Paraopeba River, whose watershed encompasses 48 municipalities, with a population of 1.3 million inhabitants. According to Brazil’s SOS Atlantic Forest Foundation, river water samples taken one month after the tragedy revealed copper levels 600 times above the level permitted for human consumption, irrigation, fishing, and recreation.

4. Importantly, this was the *second* catastrophic dam collapse involving Vale in just over three years. The first was the November 5, 2015 collapse of a tailings dam for the Fundão mining complex in Mariana, Minas Gerais, Brazil, which was jointly owned by Vale and BHP Billiton Brasil Ltda. That dam failure resulted in 19 deaths and is considered one of the largest environmental disasters in Brazil’s history.

5. In the wake of the 2015 Mariana dam collapse, there were changes in Brazil’s national dam safety policy² and in Vale’s organizational structure. The Company created a specific division to improve dam risk management, the Geotechnical Risk Management department, and

¹ Dam 1 is also referred to in documents and testimony as “B1”, a likely shortening of “barragem,” which is Portuguese for “dam”.

² See Section IV.B., below.

periodically convened an Independent Panel of Experts for Safety and Risk Management of Geotechnical Structures (“PIESEM”) to advise Vale on dam risks and safety management, which was attended by numerous Vale executives and employees.³ The PIESEMs produced reports that were distributed to Vale management.

6. Because the Mariana dam that collapsed had been constructed in the “upstream” method—which is generally less stable than other methods of constructing tailing dams—Vale sought to downplay its exposure to the risks associated with upstream tailings dams. For instance, in a quarterly call with analysts on July 28, 2016, Defendant Poppinga, the Executive Director of Ferrous Minerals and Coal, indicated that the Company would not be impacted by potential tighter regulation on upstream tailings dams, stating, “No matter what will happen in terms of specifically the upstream construction method of tailing dams in Brazil in terms of legislation or restrictions, we must say that *Vale -- we don't have those dams. Right? We don't have -- we practically have no upstream dams in our operation continuously.*”⁴

7. When Defendant Fabio Schvartsman took office on May 22, 2017, he touted the slogan, “*Mariana never again,*” and assured the public that his management would be focused on four pillars: performance, strategy, governance, and sustainability. In a speech to Vale’s employees, which was quoted in an *Época Negócios* article, Schvartsman stated:

To Vale, which is a natural resources company, sustainability is not an option, it is an obligation. True sustainability is about posture and attitude. Besides that, *we should adopt together the slogan: Mariana never again. May this be the last time this company be involved directly or indirectly in a social and environmental disaster of Mariana's proportion.* I want to take together with you all the commitment to be a world reference in sustainability.

³ The PIESEM meetings were not open to the public.

⁴ Similarly, Vale’s 2016 Annual Report filed with the SEC on April 11, 2017 indicated that whatever upstream tailing dams Vale had were safe, stating Vale had “*conducted extraordinary audits on the stability conditions of our upstream dams, and no anomalies were identified.*”

8. Vale's Sustainability Reports issued in 2017 and 2018 assured the market that Vale followed best practices in dam safety management, for example, stating that "*Vale maintains the management of its dams in permanent alignment and updating with the good and strictest international practices, standards of which exceed the legal requirements.*"

9. By early 2018, Defendants were touting the "impeccable" condition of Vale's tailings dams. In an April 10, 2018 article in *Valor Economico*, Vale's chief executive officer, Defendant Fabio Schvartsman boasted about his review and findings of the condition of Vale's tailings dams as follows:

Vale's tailing dams are in a state of "*impressive*" quality, the president of the mining company Fabio Schvartsman assured. The executive says that as soon as he took office last year, he asked for a review of the conditions of the dams and the result was very positive.

"As soon as I started as president, I thought about the state of the dams. If there was another accident like Mariana's, my management would be short," he said at an Itaú event in São Paulo. "I don't know if this work was done after Mariana or if it was already like that, but today the dams are impeccable."

10. However, contrary to their Class Period statements, Defendants knew or recklessly disregarded that many of Vale's tailings dams, including Dam 1, were not in a good or safe condition and that the Company was not taking the critical measures necessary to protect against another catastrophic dam collapse. Rather, the evidence surfaced in numerous investigations sparked by the Dam 1 collapse starkly contradicts Defendants' Class Period statements about Vale's dam safety practices and conditions and the Company's socio-environmental sustainability practices. In summary, the evidence shows that:

- (a) At least *as early as July 7, 2016*, Defendants knew of a sufficiently serious doubt concerning Dam 1 that Defendant Gerd Peter Poppinga (Executive Director of Ferrous Minerals and Coal) ("Poppinga") ordered the dam be closed (not receive any further tailings deposits). During the same month, Vale received two Dam 1 liquefaction

studies which found such extremely low factors of safety⁵ that they indicated a high probability of failure and Vale should have triggered “emergency level 3” (the most severe emergency category, which requires evacuation of the surrounding area and other measures) under its Mining Dams Emergency Action Plan (“PAEBM”)—but Vale did not do so;

- (b) Throughout 2017, audits of Dam 1 continued to indicate factors of safety well below Vale’s purported safety standard,⁶ but Vale nevertheless signed the Stability Condition Statements which were submitted to Brazilian regulators. Additionally, risk assessments in 2017 indicated that Dam 1 was at an unacceptably high risk of liquefaction⁷ and failure;
- (c) Throughout 2018, Dam 1 continued to have an unacceptably high probability of failure according to the Company’s risk analyses. It also continued to have a factor of safety far below Vale’s purported standard, but Vale pressured its auditor, TÜV SÜD—which had a financial conflict of interest—to issue Stability Condition Statements despite Dam 1’s failing test results. In October 2018, Vale was specifically warned about the need to reduce Dam 1’s water table to avoid triggering liquefaction;
- (d) Vale failed to properly address several alarming events that occurred in 2018 including, most notably, an attempt in June 2018 to install deep horizontal drains in Dam 1 that

⁵ The “factor of safety” is a number representing the ratio of resistance to load. Among other uses, it is the main technical parameter used to determine whether a Stability Condition Statement for a dam can be issued by an auditor.

⁶ The recommended international standard for the factor of safety for tailings dams in an undrained state, such as Dam 1, was 1.3 or higher. Additionally, to be reliable, the factor of safety should be based on field testing of the dam, rather than just laboratory testing, as Vale was informed in November 2017 by PIESEM. Vale claimed to adopt these standards, but Dam 1’s factor of safety in the undrained state was lower than 1.3 throughout the Class Period.

⁷ Liquefaction is a phenomenon in which solids act like liquids. It was the cause of the Mariana dam collapse, and is believed to be the cause of the Dam 1 collapse.

caused rapid, dangerous water leaks;

(e) Vale did not attempt any further efforts after June 2018 to reduce Dam 1’s water table and improve its stability before it collapsed in January 2019, despite TÜV SÜD’s dire warning to Vale directors in November 2018 that doing so should be a top priority because of the issue of liquefaction, and demanding an “extremely urgent” topographic study.

11. Based on these and other facts alleged herein which were known to Defendants, Defendants materially misrepresented or failed to disclose throughout the Class Period that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and did not meet Vale’s own purported safety standards; and (4) at least as early as 2018, Vale’s third-party dam safety auditor had a financial conflict of interest, and issued Stability Condition Statements under fear of economic reprisal from Vale.

12. In the wake of the Dam 1 collapse, investigations were immediately launched by federal, state, and local Brazilian authorities seeking information regarding the causes and responsibility for the collapse. In connection with the investigations, three employees of Vale and two of TÜV SÜD were arrested on the request of state prosecutors on January 29, 2019. An additional eight employees of Vale were arrested on February 15, 2019.

13. On March 1, 2019, Brazil’s federal police department, federal prosecutor’s office, and the Minas Gerais state prosecutor’s office jointly sent a letter to Vale’s board of directors (the “Prosecutors’ Letter”) formally recommending the removal of numerous Vale executives,

including Individual Defendants Fabio Schvartsman (CEO) (“Schvartsman”) and Poppinga, based on evidence that:

...Vale SA’s corporate geotechnical department,⁸ created after the Mariana disaster with the purpose of improving the risk management of dams, systematically acted to get stability declarations for dams with structures that did not reach the legal parameters established by the company, so much so that on more than one occasion the corporate geotechnical division substituted external auditors that refused to give false declarations[.]

14. The Prosecutors’ Letter notes that this conduct was contrary to the Company’s public statements touting its socio-environmental responsibility, stating that “***business management goes in a completely different direction from the alleged corporate governance of socio-environmental responsibility that the company has been surprisingly spreading in the media and to the society in general as if it has been completely followed throughout the entire time.***”

15. According to the Prosecutors’ Letter, internal documents showed that “***the high officers of Vale SA were frequently fed with information related to the safety conditions of the structures under the company’s responsibility,***” and specifically referenced Vale’s CEO and board of directors in that regard.

16. Therefore, the Prosecutors’ Letter formally recommended “the immediate removal” of nine Vale executives, including Defendants Schvartsman and Poppinga, “from any function or activity in the companies belonging to the Vale SA group, forbidding their access to any building or vicinity, as well as sending an internal notice to Vale SA employees not to share with those people any matter that relates to their work.” The Prosecutors’ Letter also recommended the “immediate removal” of five additional Vale employees from “any function or activity . . . related to risk management and/or safety monitoring of dams.” It gave Vale ten days to respond.

⁸ This department is also referred to as “dam management,” the group under the leadership of Alexandre Campanha, in the reporting chain to Defendant Poppinga.

17. On March 2, 2019, Schvartsman, Poppinga, and two other top executives⁹ submitted requests for temporary leaves of absence, which were accepted by Vale's Board of Directors. On March 7, 2019, Vale's Executive Board decided to comply with the other recommendations of the Prosecutors' Letter, removing and relocating the listed employees.

18. On July 2, 2019, Brazil's Federal Senate's Parliamentary Commission of Inquiry (the "CPI") into the collapse of Dam 1 released a 400-page final report of its findings and recommendations.

19. The CPI stated, based on its review of documents and hearing testimony regarding the Dam 1 collapse, that "*[t]he first and most important conclusion is that it was not an accident.*" Rather, the report continues, the "Brumadinho tragedy was the result of a combination of factors. *At the root of them all is the mantra of cost reduction, applied to a dam that failed to contribute to the production and was turned into a simple item in some spending spreadsheet.*"

20. In line with the findings in the Prosecutors' Letter, the CPI damningly found that:

Vale management and the board knew the risks and decided to take them. Whoever calculated the risk, whoever assessed the risk and whoever decided what to do, or rather, what not to do, was aware that, behind reports and figures there was a concrete element: a huge dam of mud that could kill and destroy.

21. The CPI report also suggested that Defendants' prior statements about Dam 1 safety were misleading, stating: "[t]he breaking of Dam 1 puzzled the entire Brazilian engineering and geology community. *Watching from a distance and based solely on the statements and information provided by Vale, the impression would be that the dam broke without any apparent cause and without notice. It was not, however, what happened.*"

22. In reaching its conclusions, the CPI investigation focused on four key factual

⁹ The other top executives who took a temporary leave of absence are Lucio Cavalli and Silmar Silva, discussed further at Section IV.E., below.

findings:

1. Dam 1 was built and elevated with design, execution, and documentation deficiencies, especially in relation to its drainage system. Seventeen years after its acquisition by Vale, many of the problems had not been solved.

2. *One year before the tragedy, the dam gave many signs that there were serious risks, which were not properly addressed.*

3. The Stability Condition Statements for Dam 1 did not meet the standards indicated by the PIESEM panel of experts and accepted by Vale. *The production, analysis, and review of reports suffered undue interference by Vale, to ensure obtaining the legal requirement of the Stability Condition Statements.*

4. *The management and senior management of Vale, within their competence and assignments, were aware of the risks of Dam 1 and the necessary steps to increase its safety.*

23. As part of the extensive evidence cited in support of these factual findings, which is discussed in greater detail in the Factual Background section below, the CPI cited documents and testimony demonstrating the knowledge of top-level Vale executives in Dam 1 safety issues, including, for instance testimony by Defendant Poppinga that he met with his Geotechnical Management team weekly and they provided him with “all the necessary information to know if there was a more serious problem.” Poppinga also testified that “*I never refrained from passing anything along to Mr. Fabio Schvartsman on this matter.*” Testimony about Vale’s management structure indicated two divisions involved in dam risk management, one of which reported to Poppinga and the other of which reported to Defendant Luciano Siani Pires (“Siani”), Vale’s CFO. And there were indications in the documents that information about dams in the unacceptable risk zone was reported to top management, including the CEO and the Board of Directors. Based, in part, on the CPI’s findings of executive knowledge, the CPI recommended indictments of several Vale executives including Defendants Schvartsman and Poppinga, on charges including *intentional homicide.*

24. By misrepresenting and concealing from investors material facts about Vale’s dam safety conditions and risk management efforts throughout the Class Period, Vale’s Securities’ prices were artificially inflated. When the concealed risks materialized, and the truth reached the market, investors saw their share values plummet.

25. On Friday, January 25, 2019, Dam 1 collapsed at 12:28 P.M. local time (11:28 A.M. E.S.T.). News of the devastating dam failure quickly spread via numerous media outlets, causing Vale’s ADS share price to fall by \$1.20 per share or over 8% to close at \$13.66 per share.

26. Significant news concerning the impacts of the Dam 1 breach continued to emerge over the weekend of January 26-27, 2019, and on Monday January 28, 2019. On Saturday, January 26, 2019, the federal Public Prosecutor’s Office of Brazil (the “MPF”) ordered the formation of a task force to investigate the causes of, and responsibility for, the dam collapse. Additionally, Vale issued three press releases on Sunday, January 27, 2019 (filed with the SEC on January 28), stating that: (1) 305 people were missing, and confirming 16 deaths (far less than media reports of 50 or more); (2) judges had granted attachments to Vale’s bank accounts in the amount of R\$11 billion (U.S.D. \$2.92 billion) related to the dam rupture and administrative sanctions were imposed by two regulatory agencies (IBAMA and SUFIS-MG) totaling R\$250 million; and (3) as a consequence of the Dam 1 breach, Vale’s board of directors suspended the payment of dividends (previously expected to distribute dividends of at least \$4 billion in 2019-2021) and set up two committees to probe the disaster and oversee recovery efforts.

27. In reaction to these disclosures, Vale shares dropped by \$2.46, almost 20%, to close at \$11.20 per share on January 28, 2019. However, the Company’s share price remained artificially inflated after these partial disclosures and materialization of the concealed risks because Defendants continued to conceal and misrepresent material information about their grossly

inadequate dam safety management, which led to the Dam 1 breach. Indeed, in a January 28, 2019 form 6-K filing, Defendants continued to claim that Dam 1 had a Safety Factor that was “*in accordance with the world’s best practices and above the reference of the Brazilian Standard.*”

28. On February 4, 2019, *Bloomberg* reported that Vale said it was “temporarily halting some operations at its Brucutu mine . . . in compliance with a Brazilian court order issued to help improve safety after one of Vale’s tailings dam in Minas Gerais state collapsed in late January, killing more than 130 people and leveling part of a town.” On this news, Vale’s ADS share price fell by \$0.42, or 3.4%, to close at \$12.15 per share.

29. After the close of trading on February 5, 2019, it was reported that Vale would declare a force majeure on certain iron ore supply contracts due to reduced iron ore capacity after the court-ordered suspension of operations at Vale’s Brucutu mine. Additionally, on February 6, 2019, material news emerged that Vale had been forewarned by employees and inspectors that Dam 1 was at a high risk of rupture. *The Guardian* reported in an article, “‘That’s going to burst’: Brazilian dam workers say they warned of disaster,” that at least three Vale employees had raised concerns about the possibility of a Dam 1 rupture following the emergence of significant water leaks along the dam face in July 2018. Additionally, *The Wall Street Journal* reported that Vale was warned by its auditor, TÜV SÜD, in a September 2018 report that “faulty water drainage and monitoring systems represented a potential risk of failure” at Dam 1. On this news, Vale shares dropped by \$0.75, or over 6%, to close at \$11.36 per share on February 6, 2019.

30. Due to Defendants’ misstatements and omissions, and the precipitous decline in the market value of Vale’s Securities, Plaintiff and other Class members have suffered significant losses and damages.

II. JURISDICTION AND VENUE

31. The claims asserted herein arise pursuant §§10(b) and 20(a) of the Exchange Act,

15 U.S.C. §§78j(b), 78t(a) and Rule 10b-5 promulgated thereunder by the SEC (17 C.F.R. §240.10b-5). Jurisdiction exists pursuant to §27 of the Exchange Act, 15 U.S.C. §78aa and 28 U.S.C. §§1331, 1337, and 1367.

32. Venue is proper in this District pursuant to Section 27 of the Exchange Act (15 U.S.C. § 78aa) and 28 U.S.C. §§ 1391(b) and (c). Substantial acts in furtherance of the wrongs alleged and/or their effects have occurred within this District.

33. Substantial acts in furtherance of the alleged fraud or the effects of the fraud have occurred in this District. Vale disseminated materially false and/or misleading information in this District. In connection with the acts, transactions, and conduct alleged herein, Defendants directly and indirectly used the means and instrumentalities of interstate commerce, including the United States mail, interstate telephone communications, and the facilities of a national securities exchange.

III. PARTIES

A. Plaintiff

34. CAAT Pension Plan is a jointly-sponsored pension plan with its principal place of business at 250 Yonge Street, Suite 2900, P.O. Box 40, Toronto, Ontario M5B 2L7. CAAT Pension Plan manages approximately Canadian \$10.8 billion in net assets on behalf of almost fifty-thousand beneficiaries. CAAT purchased Vale Securities during the Class Period and was damaged thereby. CAAT's transactions during the Class Period for the Vale Securities alleged herein are the same as those set forth in the certification attached to Plaintiff's motion for appointment as Lead Plaintiff (ECF No. 8-1).

B. Defendants

35. Vale is a multinational mining and metals company incorporated in Brazil and headquartered in Rio de Janeiro, Brazil. During the Class Period, Vale Securities traded on the

NYSE. Its ADSs traded under the ticker symbol, “VALE.”

36. Defendant Murilo Ferreira (“Ferreira”) served as the Company’s Chief Executive Officer (“CEO”) from May 2011 until May 2017. Ferreira signed Vale’s annual reports and annual certifications pursuant to the Sarbanes-Oxley Act of 2002 (“SOX”) and the Exchange Act, stating that the annual reports do not contain any materially false statements or omissions, and that the financial information contained therein was accurate and disclosed any material changes to Vale’s internal controls over financial reporting. During the Class Period, Ferreira participated in the Company’s conference calls with analysts and/or investors, as described herein. Given his senior position within the Company, Ferreira possessed the power and authority to control the contents of the press releases, investor and media presentations, and all filings Vale made with the SEC during the Class Period. Ferreira was a direct and substantial participant in the fraud.

37. Defendant Schvartsman served as Vale’s chief executive officer from May 2017 until March 2019, when he took a temporary leave of absence in response to the formal recommendation of the Prosecutors’ Letter. Schvartsman attained graduate and post-graduate degrees in production engineering and a post-graduate degree in business administration. Schvartsman signed Vale’s annual reports and annual certifications pursuant to the Sarbanes-Oxley Act of 2002 (“SOX”) and the Exchange Act, stating that the annual reports do not contain any materially false statements or omissions, and that the financial information contained therein was accurate and disclosed any material changes to Vale’s internal controls over financial reporting. During the Class Period, Schvartsman participated in the Company’s conference calls with analysts and/or investors, as described herein. Given his senior position within the Company, Schvartsman possessed the power and authority to control the contents of the press releases, investor and media presentations, and all filings Vale made with the SEC during the Class Period.

Schvartsman was a direct and substantial participant in the fraud.

38. Defendant Siani has been Executive Director of Finance and Investor Relations since August 2012. Siani was also in charge of Vale’s Business Risk Management division, in which dam risks and other business risks were analyzed and reported monthly to Vale’s Executive Risk Committee, of which Siani was the chairman. During the Class Period, Siani signed Vale’s annual reports and annual certifications pursuant to SOX and the Exchange Act, stating that the annual reports do not contain any materially false statements or omissions, and that the financial information contained therein was accurate and disclosed any material changes to Vale’s internal control over financial reporting. During the Class Period, Siani participated in the Company’s conference calls with analysts and/or investors, as described herein. Given his senior position within the Company, Siani possessed the power and authority to control the contents of the press releases, investor and media presentations, and all filings Vale made with the SEC during the Class Period. Siani was a direct and substantial participant in the fraud.

39. Defendant Poppinga was Executive Director of Ferrous Minerals and Coal from July 2017 to March 2019,¹⁰ when he took a temporary leave of absence in response to the formal recommendation of the Prosecutors’ Letter. During the Class Period, Poppinga participated in certain Company conference calls with analysts and/or investors, as described herein. According to his own testimony, Poppinga created a “dam management” division which reported to him. Poppinga was a direct and substantial participant in the fraud.

40. Defendant Luiz Eduardo Froes do Amaral Osorio (“Osorio”) has been Vale’s Executive Director of Sustainability and International Business from July 2017 to present. During the Class Period, Osorio participated in certain Company conference calls with analysts and/or

¹⁰ Prior to that, he was the Executive Director of Ferrous Minerals since 2014.

investors, as described herein. Osorio was a direct and substantial participant in the fraud.

41. Defendants Ferreira, Schvartsman, Siani, Poppinga, and Osorio are collectively referred to herein as “Individual Defendants,” and, together with Vale, are referred to as “Defendants.”

42. Because of the Individual Defendants’ positions, they had access to the adverse undisclosed information about Vale’s business, operations, and practices through access to internal corporate documents, conversations and contact with other corporate officers and employees, attendance at meetings, and through reports and other information provided to them. Their positions of control and authority as officers or directors enabled the Individual Defendants to control the content of the SEC filings, press releases, and other public statements of Vale during the Class Period. Accordingly, each of the Individual Defendants bears responsibility for the accuracy of the public reports and press releases detailed herein and is liable for the misrepresentations and omissions contained therein.

43. During the Class Period, each of the Individual Defendants substantially participated in and had authority and control over the content of the Company’s false and misleading statements and how those statements were communicated to investors. The Individual Defendants also engaged in conduct in furtherance of a fraudulent scheme and course of business and were involved in the preparation and dissemination of Vale’s false and misleading statements, all of which made it necessary or inevitable that material misrepresentations in the course of Defendants’ scheme would be communicated to, and mislead, investors.

44. The Individual Defendants were prohibited from using the instrumentalities of interstate commerce or the mails to: (i) employ any device, scheme, or artifice to defraud; (ii) make any untrue statement of a material fact or to omit to state a material fact necessary in order to make

the statements made, in light of the circumstances under which they were made, not misleading; or (iii) engage in any act, practice, or course of business which operates or would operate as a fraud upon any person. Defendants' conduct violated the Exchange Act and SEC regulations promulgated thereunder in connection with the purchase or sale of Vale Securities.

45. Each of the Defendants is liable as a participant in a fraudulent scheme and course of business whose primary purpose and effect was to operate as a fraud and deceit on purchasers of Vale Securities by disseminating materially false and misleading statements and/or concealing material adverse facts about Vale's dam safety management and dam-related risks. Defendants' scheme deceived the investing public regarding Vale's operations and the intrinsic value of Vale's Securities, and caused Plaintiff and other members of the Class to be damaged as a result of their purchases of Vale Securities at artificially inflated prices.

46. The Company's press releases and SEC filings were group-published documents, representing the collective actions of Company management. The Individual Defendants directly participated in the management of the Company, were directly involved in the day-to-day operations of the Company at the highest levels, and were privy to confidential proprietary information concerning the Company and its business, operations, products, growth, financial statements and financial condition, as alleged herein. The Individual Defendants were involved in drafting, producing, reviewing and/or disseminating the false and misleading statements and information alleged herein, and were aware, or recklessly disregarded, that the false and misleading statements were being issued regarding the Company, and approved or ratified these statements, in violation of the federal securities laws.

47. The Individual Defendants were able to and did control and monitor the content of the various SEC filings, press releases, and other public statements pertaining to the Company

during the Class Period. Each Individual Defendant was provided with copies of the documents alleged herein to be misleading prior to or shortly after their issuance and/or had the ability and/or opportunity to prevent their issuance, or cause them to be corrected. Accordingly, each Defendant is responsible for the accuracy of the public reports and releases detailed herein, and is therefore primarily liable for the representations contained therein.

IV. BACKGROUND FACTS

A. Dam 1 Background Information

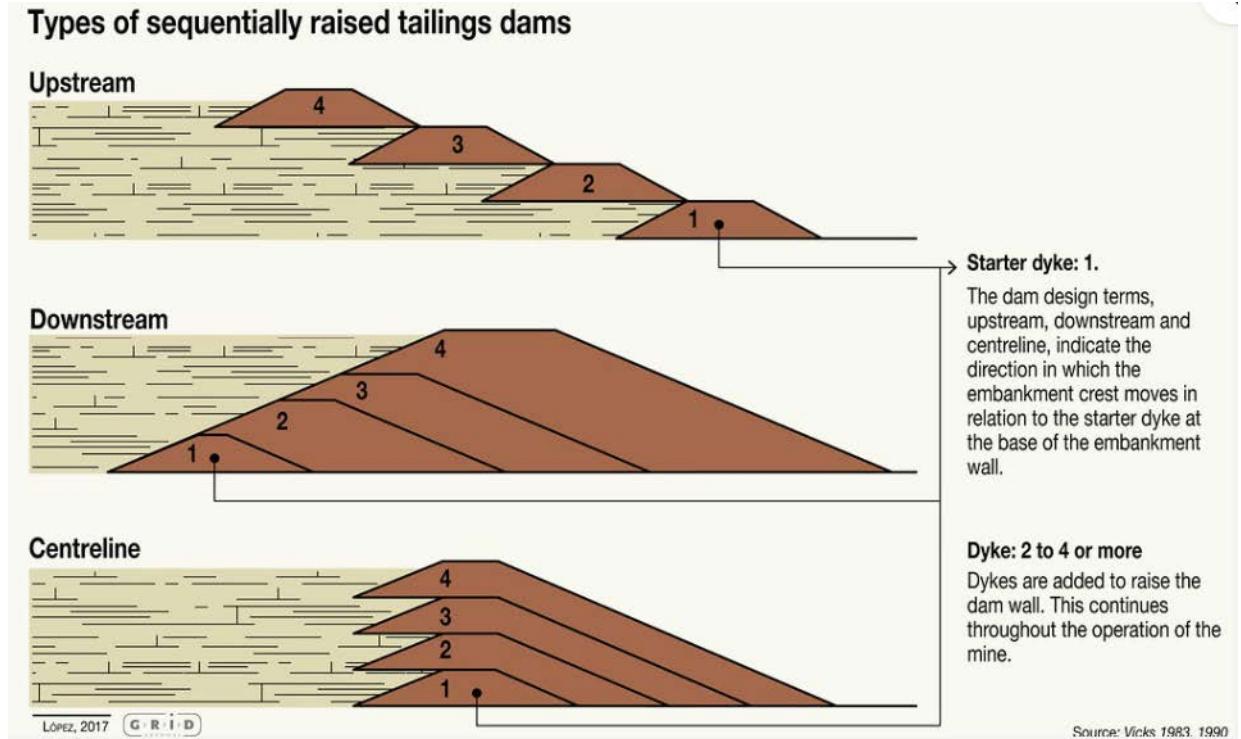
48. Dam 1 was an upstream tailings dam that was part of the Córrego do Feijão mine, in Vale's Paraopebas Complex in the Southern System.¹¹

49. Tailings are the waste product created through ore processing, in which the valuable mining products—here, iron ore fines and pellets—are separated from other mined matter (the tailings). Iron ore tailings are comprised of particles containing, among other elements and compounds, iron, alumina, phosphorus, and silica.

50. Tailings are stored in dams that are usually constructed of waste rock and the tailings themselves, but may also be built with soil or rockfill. Tailings dams may be built using the upstream, downstream, or centerline methods, with upstream being the cheapest and most susceptible to failure and downstream being the most expensive and least susceptible to failure.

51. Upstream, downstream, and centerline tailings dams are constructed as depicted in the following graphic:

¹¹ The Córrego do Feijão mine produced 7.8 million metric tons of iron ore in 2017 and 8.5 million metric tons in 2018, out of a total of 26.3 million metric tons and 27.3 million metric tons, respectively, of the Paraopebas Complex.



52. The most common causes of tailings dam failures are overtopping (water flowing over the crest and down the outer embankment of the dam), earthquakes, foundation failure, internal erosion, and static liquefaction.

53. According to a Company Form 6-K filing on January 28, 2019, Dam 1 was built in 1976 by Ferteco Mineração (acquired by Vale on April 27, 2001). Between 1982 and 2013, Dam 1 was elevated 10 times. At the time of its collapse in 2019, it was 86 meters high with a crest length of 720 meters. The disposed tailings occupied an area of 249.5 thousand square meters, and the disposed volume was 11.7 million cubic meters.

B. Brazilian Dam Regulation Requires Periodic Reviews and Reports Regarding Dam Stability

54. Pursuant to Law 12.334 ratified September 20, 2010 known as the “Dam Safety Law,” Brazil instituted the National Dam Safety Policy (“PNSB”) to enforce safety standards and reduce the number of accidents relating to dam failures. The law imposed certain responsibilities on dam owners and, under the PNSB, established new mandates for regulatory entities.

55. In May 2017, the Departamento Nacional de Produção Mineral or “DNPM” (the Brazilian agency in charge of managing mining resources)¹² created new legal obligations for companies operating mining dams in Brazil, including: (1) conducting a Regular Dam Safety Inspection semiannually and submitting a Stability Condition Statement (“DCE”) after each inspection; (2) conducting Periodic Dam Safety Reviews with documented hazards and failure impact studies; (3) conducting semi-annual emergency action plan trainings for high risk dams,¹³ and (4) installing video monitoring for all high-risk dams by June 2019. This regulatory regime relied primarily on self-reporting by dam owners, as Brazilian regulators lack the resources to regularly inspect all dams.

56. The Stability Condition Statement is a sworn statement attesting to the structural integrity of the dam, that is signed by the dam inspector and the dam owner. The main technical parameter used to decide whether a Stability Condition Statement for a dam can be issued by an auditor is the factor of safety (often abbreviated as “FS,” and sometimes referred to as the “safety factor”).¹⁴ The factor of safety is a number representing the ratio of resistance to load, which is calculated in a stability analysis¹⁵ based upon the geometry of the dam, the geotechnical parameters, and the height of the water table (measured by piezometers).¹⁶ A mean factor of safety of 1 means that resistance and load are equal, and implies a probability of failure of 50%—an

¹² In December 2018, the DNPM was changed to the National Mining Agency (“ANM”).

¹³ The technical classification of the risk is based on the “associated potential damage” or “DPA.” Thus, the regulations address high-DPA, medium-DPA, and low-DPA dams.

¹⁴ Another important basis of a Stability Condition Statement is a visual inspection of the dam.

¹⁵ A “stability analysis” measures the tendency of a dam to fail by sliding. A “risk analysis” is a more comprehensive evaluation which considers all possible modes of failure, including the most common ones: overtopping (water flowing over the crest and down the outer embankment of the dam), earthquakes, foundation failure, internal erosion, and static liquefaction. From a risk analysis, an annual probability of failure is derived.

¹⁶ To the extent piezometric data was missing or inconsistent for Dam 1, as indicated in various emails and reports including TÜV SÜD Dam Safety Audits, it would create considerable uncertainty in the calculation of the factor of safety.

extremely unstable condition.

57. Dam 1’s most recent DCEs were issued by TÜV SÜD do Brasil, an international geotechnics company, on June 13, 2018 and September 26, 2018 in connection with the Periodic Dam Safety Review and the Regular Dam Safety Inspection processes required by law. Defendants stated throughout the Class Period that Vale maintained its dams in accordance with the “strictest international practices, standards of which exceed the legal requirements.” Even after Dam 1 collapsed, the Company publicly claimed that it had a factor of safety that was “in accordance with the world’s best practices and above the reference of the Brazilian Standard.”

C. On November 5, 2015, a Dam in Mariana that was Co-Owned by Vale Collapsed

58. A little more than three years before the Dam 1 collapse, another upstream tailings dam owned, in part, by Vale collapsed on November 5, 2015 in the municipality of Mariana, Minas Gerais. The dam was part of the Fundão mining complex, which was owned by a partnership of Vale and BHP Billiton called Samarco. The Mariana dam collapse released approximately 32 million cubic meters of waste comprised mostly of iron oxide and silica, which rushed in a wave of mud through a narrow valley, burying the town of Bento Rodrigues and traveling in the Rio Doce river all the way to the ocean, creating a toxic plume along the coast of Espírito Santo. Nineteen people were killed—mine workers and residents of Bento Rodrigues—who received no warning of the dam collapse because alarm sirens failed to sound.

59. A preliminary technical report by the Brazilian Institute of Environment and Renewable Natural Resources (“IBAMA”) released on November 26, 2015 stated that “the level of impact was so deep and perverse over several ecological strata it is impossible to estimate a recovery period of the local fauna.” Among other things, the disaster caused the destruction of 1,469 hectares of land, including areas designated as Permanent Preservation Areas.

60. The Mariana tragedy brought heightened scrutiny to the risk posed by upstream tailings dams in Brazil. As discussed in Section IV.B., above, new dam safety audit and reporting requirements became effective in May 2017.

D. Prior to the Start of the Class Period, Defendants Were Aware of Significant Stability Concerns with Dam 1

61. Prior to the start of the Class Period, it was widely known and plainly documented within the Company that Vale lacked critical construction and engineering information about Dam 1 since its acquisition in 2001. For instance, Vale has no record of the existence of an internal drainage system in the initial dike and first raise of the dam, and the design for the next five raises was not followed in its entirety. The documents do not indicate why the design was not followed, nor do they provide the modified design (the “as-built” diagrams). As noted in the CPI report, “for the initial dike and the first raises the information is either available but not reliable or non-existing, especially when it comes to the internal drainage system and the physical and mechanical determination of materials.” The uncertainty regarding the internal drainage system of Dam 1 is important because it made it difficult to assess the options for reducing the water content in the dam, which is a major cause of liquefaction and collapse.

62. In 2012, Vale hired a consulting company, Bureau de Projectos e Consultoria, to devise a plan to close Dam 1 and remove the waste. However, when ore prices declined, Vale put the project on hold, according to testimony provided to the federal police.

63. On December 18, 2015, a little over a month after the Mariana dam collapse, Vale obtained a risk analysis for Dam 1 from Pimenta de Ávila Consultoria. The analysis indicated a range of failure probabilities using different methodologies, with results as high as a 50% failure probability for Dam 1. However, the analyses were based on geotechnical measurements made in 2006, therefore the consultant advised that Vale should collect new data and reassess.

E. Top Management—Including the Individual Defendants—Were Fully Informed of Significant Dam Risks

64. Defendant Poppinga testified before the CPI concerning Vale’s post-Mariana creation of two divisions responsible for dam risk management. One division, Geotechnical Risk Management, was created by Poppinga as a “first line of defense” to audit and standardize dam management criteria under the leadership of Alexandre Campanha, who reported to Lucio Cavalli (one of Poppinga’s direct reports).¹⁷ The “second line of defense” was the Business Risk Management (or “GRN”) unit, which reported to Defendant Siani, Vale’s CFO. GRN analyzed dam risks along with all business risks, and maintained a risk matrix depicting Vale’s tailings dam breach risk.

65. Poppinga stated that the Business Risk Management group under Defendant Siani reported on a monthly basis to Vale’s Executive Directors, and that Poppinga’s subordinates reported to him weekly, providing him with “all the necessary information to know if there was a more serious problem”:

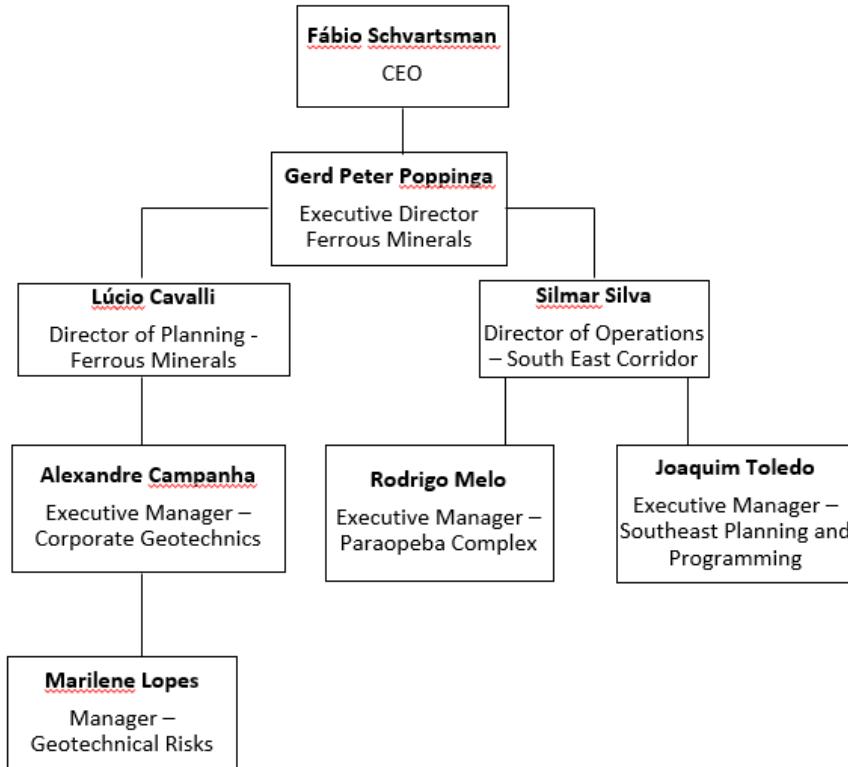
Then, governance was set up immediately after the Samarco event in a way that it would come... That was reported to the directors on a regular basis. ***GRN, the Business Risk Management, was reported monthly to the Executive Directors, and I had weekly meetings with my operational subordinates, because they were the ones who had the risk management information and they are the ones responsible.*** The tip of the staff is responsible for dam safety. So, ***by having weekly meetings with these people, I had all the necessary information to know if there was a more serious problem.***

66. Importantly, Poppinga also testified that “***I never refrained from passing anything along to Mr. Fabio Schvartsman on this matter.***”

67. In summary, the chain of command with respect to Poppinga and his subordinates,

¹⁷ Lúcio Cavalli was the Director of Ferrous Mineral Planning. Alexandre Campanha’s title according to the CPI report was Executive Manager Corporate Geotechnics (but the Prosecutors’ Letter differs slightly, referring to him as the Executive Manager of Corporate Geotechnics ***Governance***).

most of whom are on the emails and documents discussed below, was as follows:



F. By No Later than July 2016, Defendants Knew or Recklessly Disregarded by that Dam 1 Had a High Probability of Failure And Submitted a Stability Condition Statement for It Irrespective of that Fact

68. On July 7, 2016, Defendant Poppinga sent an email to his subordinates ordering the immediate shut down of Dam 1 (also referred to as “B1”) based on an undescribed “doubt” that arose:

As per our discussion and *having learned today of the doubt that arose related to B1 of Feijao mine we will immediately shut down production activities at this dam* until we conclude all the tests and additional calculations that are in progress. *I also ask you to assess reinforcement measures that can be implemented in a preventive manner.*

69. This email was sent to Silva, Cavalli, and Campanha, among others. Vale has confirmed in post-collapse Company filings that Dam 1 ceased receiving tailings in 2016.

70. At the time Poppinga sent this email, Geoconsultoria was preparing two static liquefaction analyses of Dam 1 that were finalized on July 15, 2016 and July 26, 2016—the

preliminary results of which likely were communicated in advance to Vale given the alarming findings.¹⁸ Specifically, Geoconsultoria's analyses found factors of safety ranging from 0.93 to 1.19. Geoconsultoria's findings suggested a *roughly 50% probability of dam failure and should have caused Vale to trigger an “emergency level 3” under its PAEBM for Dam 1, requiring evacuation of the area and other measures.*¹⁹

71. On October 4, 2016, Poppinga sent an email to his subordinates following up on the *failure to obtain Stability Condition Statements* for eight tailings or sediment containment structures in Ferrous Minerals which “must be addressed immediately.” The email does not specify which structures failed to obtain Stability Condition Statements in the recent audits.

72. However, the Company's subsequent disclosures indicate that all of Vale's dams in Poppinga's division received their 2016 Stability Condition Statements.²⁰

G. Defendants Knew or Recklessly Disregarded that Dam 1 Had a High Probability of Failure in 2017 and 2018

73. Subsequent documents and testimony described by the CPI and other investigations show that Dam 1 continued to have a high probability of failure in 2017 and 2018.

¹⁸ Poppinga's reference in the email to “the tests and additional calculations that are in progress” would almost certainly have included Geoconsultoria's liquefaction analyses. Thus, whether the “doubt” that arose was due to preliminary findings by Geoconsultoria or some other information of which Poppinga was informed while awaiting Geoconsultoria's findings, the evidence is clear that Defendants were aware of the extremely unstable condition of Dam 1 in July 2016.

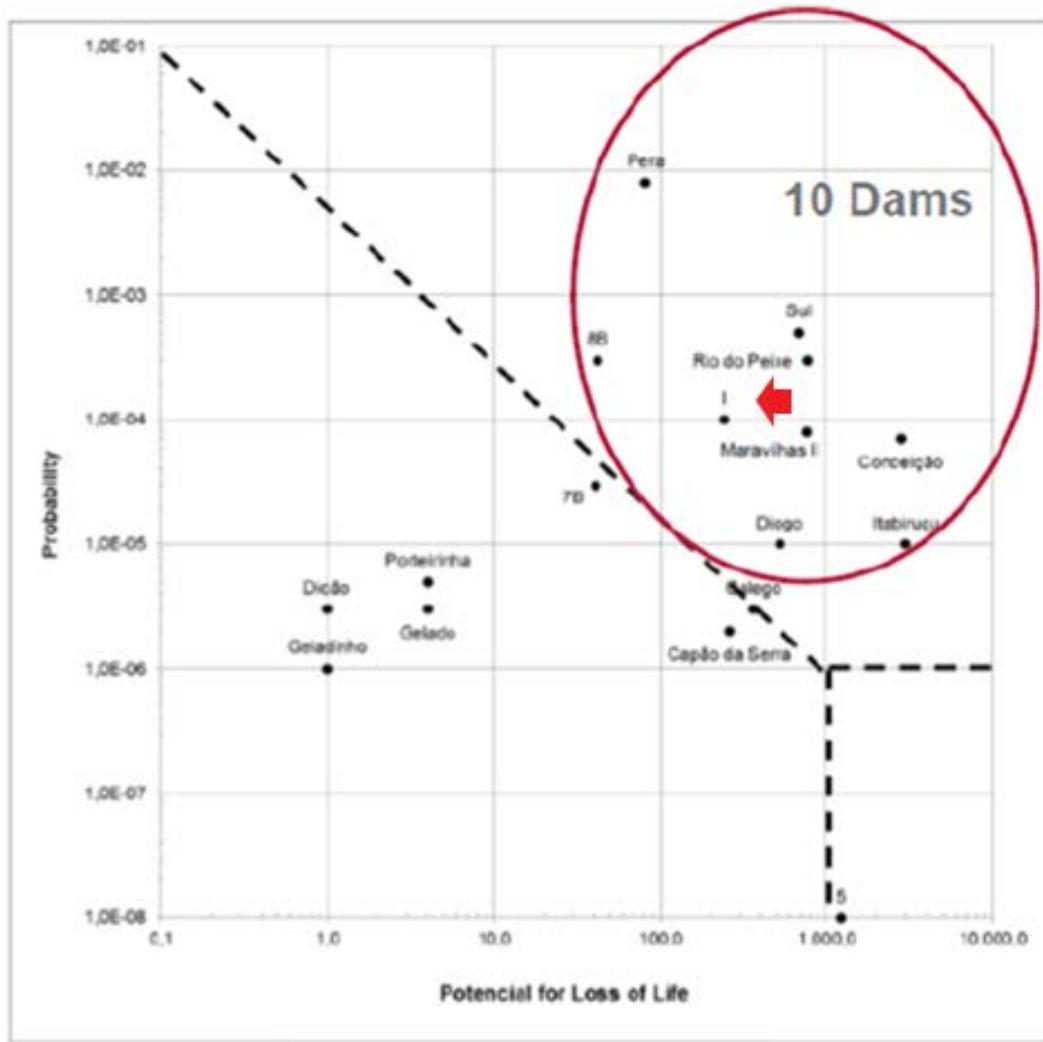
¹⁹ The timing of Poppinga's email also roughly coincides with Vale's conduct of certain “extraordinary audits” of Vale's upstream tailing dams pursuant to a decree issued by Minas Gerais. Company filings indicate that between May 2016 and September 2016, Vale conducted extraordinary audits of the stability conditions of its upstream dams but stated that “no anomalies” were found. Additionally, another email cited in the CPI report indicates that for Dam 1, “a drilling campaign was carried out in May 2016 especially in the foundation in order to improve knowledge about the area.”

²⁰ See Vale's 2016 Sustainability Report (discussed at paragraphs 146-152, below), stating that “in 2016, 145 dams were audited in the ferrous metals area, and the respective statements of stability conditions were filed within the deadline, in order to meet Vale's safety management requirements and legal parameters[.]”

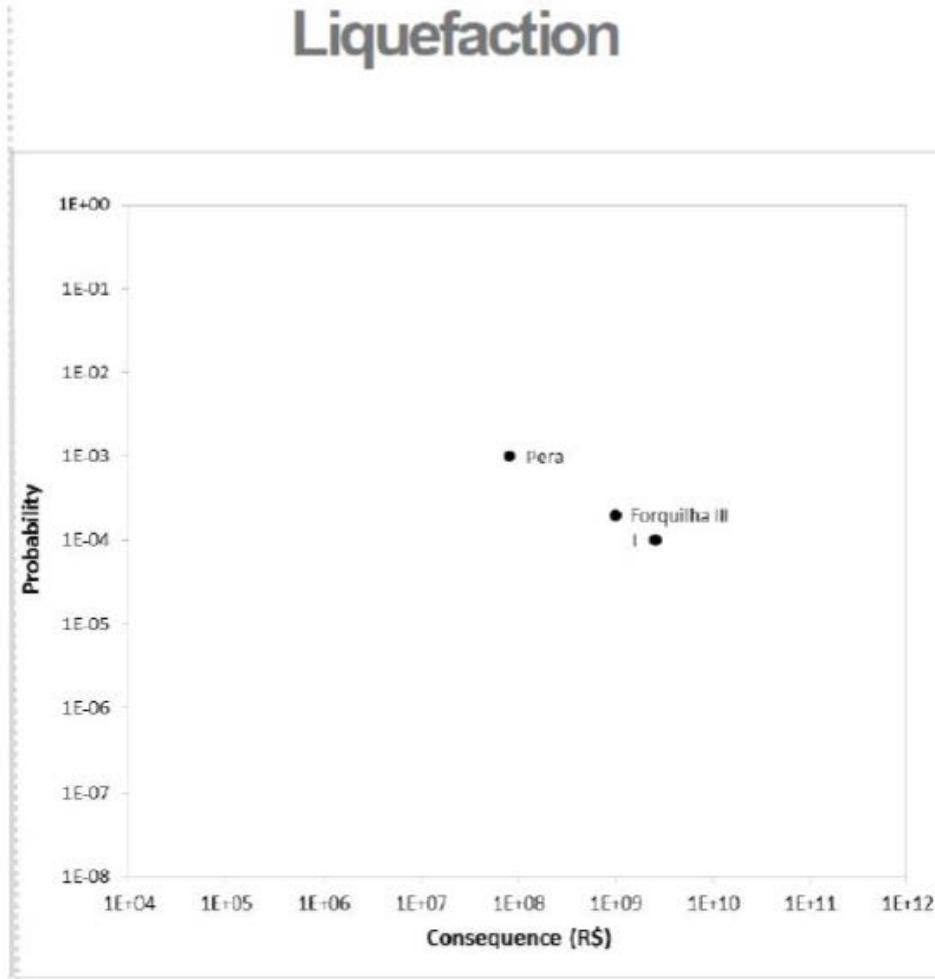
74. In February 2017, Vale retained Potamos Engineering and Hydrology, Ltd. (“Potamos”) to prepare a Geotechnical Risk Management report analyzing Dam 1’s failure probability by overtopping of the slope during floods, instability, internal erosion, and liquefaction. The report also included a hypothetical dam break study evaluating the consequences of dam failure and estimating the total financial risk (the product of the probability of failure multiplied by the total financial value of the damage). Vale indicated that the maximum acceptable probability of a dam failure was 1×10^{-4} (1 in 10,000 dams/year or .00001/year probability).²¹ Potamos’ report concluded that Dam 1’s failure probability was 3×10^{-4} , or three times Vale’s maximum risk tolerance.

75. Similarly, in November 2017 at the second international PIESEM meeting, Felipe Rocha, an employee in Vale’s Geotechnical Risk Management department, presented a slideshow with a series of risk curves indicating that Dam 1—and several other Vale dams—fell in the zones denoting ***unacceptable risk*** levels. Specifically, in risk curve using an industry standard model created by the U.S. Army Corps of Engineers to chart the probability of failure and the associated loss of life, ***Dam 1 and nine other Vale dams*** are in the unacceptable risk section of the curve (the upper, right-hand section). Dam 1 is denoted with a “I” in the red circle (with an added red arrow) in this area of the chart:

²¹ This is according to the State CPI report. November 2017 PIESEM materials likewise show Vale’s dam failure risk tolerance as being 10^{-4} .



76. Moreover, another risk curve in Rocha's presentation regarding the *specific risk of liquefaction* showed Dam 1 in the unacceptable risk zone (denoted again with the "I," just below Forquilha III):

Figure 5 - Liquefaction Risk

Source: Slides of Felipe Rocha show in PIESEM, November 2017.

77. At the end of Rocha's presentation, it stated that "*[a]ll risks with probabilities greater than 10^{-4} per year are now included in the business risk matrix of Vale and presented to the group of directors, the CEO, and the board of directors.*" As set forth in paragraph 74, above, at this time, Dam 1 was assessed as having a failure probability of 3×10^{-4} .

78. Continuing into 2018, the documents of Alexandre Campanha—who Poppinga installed as the “first line of defense” concerning dam safety management—also show Vale’s knowledge of the unacceptable risk of Dam 1. For instance, documents seized from Campanha’s office concerning a June 18, 2018 PIESEM panel advising Vale on Geotechnical Risk

Management starkly described the dangerous condition of Dam 1. In what appears to be the fifth slide of a presentation by the expert panel, titled, “Structures with probability higher than 10^{-4} ” (meaning a failure rate of one in 10,000 dams per year), it states:

Dam I: internal erosion due to saturated zones located within the deposit,²² lack of internal drainage system in the initial and first-raise dikes. Usage of sinter feed²³ in some raises and the lack of granulometry records of the drainage materials. Moreover, the structure has a history of high piezometric levels. **Probability: 2×10^{-4}**

79. Thus, the described conditions of Dam 1 rendered it **double** the acceptable risk for failure²⁴ based on a risk curve accounting for the estimated **number of lives** that would be lost and the dollar value of compensation that would have to be paid per life in the event of dam failure.²⁵

80. The document also contained several handwritten notes, likely made by Campanha, which indicated that: (1) ***all saturated tailings are susceptible to liquefaction***; (2) Brazilian law does not set a minimum factor of safety against liquefaction but Vale’s is greater than or equal to 1.3; (3) referred to the audit recommendations from the Periodic Dam Safety Review; and (4) stated “> ***make a good planning [sic] for B1. be careful.***”

²² By 2017, the appearance of muddy water in the drainage from the embankment of Dam 1, documented in photographs in TÜV SÜD’s 2017 report, provided clear evidence of internal erosion.

²³ Sinter feed is a common type of small particle iron ore, obtained at later stages of iron ore screening.

²⁴ Additionally, the October 2018 International PIESEM panel included an extended discussion of risk management. In the final report from the panel, it emphasized how “undesirable” it was for the Company to have tailings dams in the “attention zone” of 10^{-3} to 10^{-4} for an extended period of time “because of the ***relatively high level of risk that this implies, especially from a portfolio perspective*** if multiple VALE projects are in this zone.” By way of example, the report noted that if half of Vale’s dam portfolio were at a risk of 10^{-3} and the other half were at 10^{-4} , then the probability of at least one failure across the portfolio of 137 dams is 7% per year, equal to 53% in ten years. Add in one very high-risk dam (10^{-1}), and the odds jump to 16% per year or 83% in ten years. Thus, the riskiness of Vale’s entire portfolio of dams was dramatically impacted by Dam 1 being considered riskier than 10^{-4} —and it was one of ***several*** dams that Vale had in this risk category.

²⁵ This particular metric was first referenced in a December 2015 internal report by Vale’s Marilene Lopes (under Poppinga) created in the wake of the Mariana tragedy.

81. Importantly, Campanha also testified, “with certainty and conviction that the risk assessment data and collapse probability not only of Dam 1, but all dams in the Southeast Corridor, were known by both Silmar Silva and Lucio Cavalli, as both received the presentations by Geotechnical Risk Management and participated in the PIESEMs.” Thus, both of Poppinga’s direct reports were aware of the extreme risk of Dam 1.

82. Additionally, a series of emails from June 2018 with the subject line, “Results of the Periodic Dam Safety Review (RPSB)—High-DPA”²⁶ shows that Defendant Poppinga and other high-level executives were aware of the need to make improvements at Dam 1 notwithstanding the issuance of Stability Condition Statements (“DCEs”) by the auditors. Specifically, in an email to Campanha on June 15, 2018, Campanha was informed that all of Vale’s high-DPA dams had obtained DCEs:

[h]owever, it is important to mention that some structures, despite the result, deserve full attention in meeting the relevant recommendations of the external auditors, in order to ensure, first, the safety of the structures, and also obtaining the DCE in the next External Audit (September/18). They are: **Dam B1 at Feijao: Lower the phreatic surface²⁷ in the structure and implement effective decommissioning works (controlled mining) and/or strengthen the structure; . . .**

83. Thus, external auditors indicated that Dam 1 needed a lower water table and other effective decommissioning efforts (such as removing some of the stored materials), and/or strengthening of the structure. Campanha forwarded the email to Cavalli with the note, “**In the material we will prepare for Peter, we will follow this line of thought.**”²⁸ This reference to a

²⁶ As referenced in footnote 13, “DPA” refers to the associated potential damage of a dam failure, including loss of life, property damage, and environmental damage. There are different regulatory requirements for dams depending on whether they are classified as high, medium, or low DPA.

²⁷ “Phreatic surface” means the water table. Specifically, it is the level at which the pore water pressure is equal to the atmospheric pressure. It can be approximated by, and is more easily understood as, the level below which all of the pores are filled with water and above which the pores are partially filled with water and partially with air.

²⁸ The email was further forwarded by Cavalli to Silva, the Director of Operations for the Southeast Corridor, who sent it to his direct reports and others with the note, “I request special attention in

presentation of the information to “Peter” (Poppinga), and the circulation of the email to directors Cavalli and Silva led the CPI to conclude “without a doubt, that management and the board of Vale were aware of the identified problems and recommended solutions.”

84. Moreover, in October 2018, the recommendations for Dam 1 of the third International PIESEM panel on October 1-5, 2018, were circulated among Poppinga’s subordinates, including his direct reports, Silva and Cavalli.²⁹ An October 18, 2018 email from Marilene Lopes, Geotechnical Risk Manager, forwarded the recommendations to Silva, Cavalli, Campanha, and others. The PIESEM concluded that “Dam 1 (Feijao) requires more research and field monitoring to identify and design more efficient complementary measures . . . in order to reduce the current risk. But *in the meantime, efforts must continue to reduce the current level of the water table through horizontal drains and other drainage solutions.*” However, no such drainage efforts were subsequently attempted.

85. Additionally, the final report of the PIESEM panel included an extended discussion of the “liquefaction analysis and decommissioning of Dam 1.” Using Dam 1 test data from 2005 and 2016, the panel found that “all saturated tailings were considered liquefiable” and a *Safety Factor of 1.1* was calculated. The report stated, “[c]onsidering the results of the undrained slope stability analyses for Dam 1, based on undrained peak strength parameters, *several restrictions, such as no traffic of heavy equipment, no blasting nearby, minimum beach distance and so on, were imposed at the dam, aiming to avoid triggering liquefaction.*”

86. It also emphasized the importance of lowering the dam’s water level promptly,

relation to the structures listed below . . . and we will take all necessary and recommended measures.” Nonetheless, none of the recommendations as to Dam 1 were implemented prior to its collapse in January 2019.

²⁹ The CPI report notes that “Dam 1 was chosen to be studied at the 2018 meeting, out of over 130 dams analyzed, which indicated that it was not just any dam.”

stating, “[a]s the position of the phreatic levels inside the dam strongly affects the structure safety, it is recommended to *resume as soon as possible the horizontal drain installation, with a skilled contractor, as well as to look for alternatives to water table drawdown (including wells)*.”

Likewise, in the section of the report regarding decommissioning the dam it indicated that “berms or tailings mining alone are not sufficient to effectively increase the safety of this structure. It may be necessary to combine them with the piezometric level drawdown. This reinforces the need to apply all possible dewatering measures . . . and those necessary to avoid inflow from the natural abutments.”

H. Defendants Systematically Acted to Obtain Stability Condition Statements for Dam 1 Even Though it Did Not Meet Vale’s Stability Threshold

87. Evidence cited by multiple investigations shows that Defendants flouted their own purported safety standards and pressured Vale’s outside auditors to certify the stability of Dam 1 despite test findings to the contrary. Vale regularly reviewed and edited the audit reports for Dam 1.³⁰ When outside auditors did not agree to certify the stability of Dam 1, they were replaced by auditors who would.

88. In November 2017, Potamos, whom Vale had previously contracted to conduct a Geotechnical Risk Management assessment of Dam 1 (discussed above), produced the results of stability studies to Vale. Potamos found a worrying factor of safety of just **1.06**. Based on the established standard of a minimum factor of safety of 1.30, Potamos informed Vale and TÜV SÜD

³⁰ For example, the CPI noted that an August 28, 2017 email from Cristina Malheiros, a Vale engineer in Geotechnical Management, sent substantive edits to the 2017 Audit Report for Dam 1 to employees of Tractabel, the auditor. Thus, the CPI report found there was “[a] faulty auditing process, on both sides, where *the main objective seemed to be achieving the formal requirement, which was the stability report, rather than focusing on a rigorous analysis of dam safety*.” The CPI indicated that it was a “recurring practice” continuing through the last Dam 1 safety review. Likewise, the Federal Police concluded based on its review of several instances of audit report editing by various Vale employees suggested that “the determination to mitigate the description of the dam weaknesses came from higher ranking officials.”

that the findings precluded the issuance of a Stability Condition Statement for Dam 1.

89. Potamos also presented its test findings and methodology at a November 2017 PIESEM panel. The panel concurred with Potamos' field test methodology and with its application of the 1.30 factor of safety standard. The PIESEM panel concluded that Vale's previous laboratory test methodology for verifying the stability of its tailings dams was "***not reliable***" and that the use of those tests and their results "***should cease***."

90. Nonetheless, for Dam 1's next semiannual Dam Safety Audit in March 2018, Vale signed off on the submission of a Stability Condition Statement by Tractebel Engenharia using ***laboratory tests***—the methodology condemned by PIESEM and Potamos—which were conducted by Geoconsultoria Ltda.

91. Additionally, in June 2018, Vale approved the submission by TÜV SÜD of a stability declaration to the DNPM for Dam 1, even though TÜV SÜD's testing found a factor of safety of 1.09—again, far below the required factor of safety of 1.3. Testimony and emails indicate that TÜV SÜD submitted the Stability Condition Statement under pressure from Vale's geotechnical department management.

92. Indeed, in an email sent by Makoto Namba to his TÜV SÜD colleagues on May 13, 2018, he wrote that:

Marsilio is finishing the studies of liquefaction for Dam 1 at Córrego do Feijão, but everything indicates that it will not be approved, that is, the safety factor for the highest section will be lower than the minimum of 1.3. This way, strictly speaking, we cannot sign the Declaration of Stability for the dam, which has as consequence the immediate stop of all activities in the Córrego do Feijão mine. The coordinator *Felipe [Rocha/Vale]* called last Friday to know how the studies were going, and learning of the possibility of dam I not passing, he *commented that all the efforts will be made to increase the safety factor, such as lowering the water table, remining the tailings, etc.... but they are all long-time solutions, that will take 2 to 3 years to show the desired effect.* He also said that Dam Forquilha III, which is being studied by VOGBR, is not passing, but that the company will sign the DCE based on the same promises of improvement interventions. We will have the meeting with Vale tomorrow afternoon, where *Marilene [Lopes/Vale] and Cesar*

Grandchamp [Vale] will be present, and will question us if we will sign or not. The first answer that will be given is that the studies will still be audited by Leandro Moura, thus the results shown will not be definitive. Even Marsilio's study is not definitive yet. **But as always Vale will throw us against the wall and ask: what if it doesn't pass, will you sign it or not?** And for that, we will need the answer from Corporat[e], based on our technical positions. Not for tomorrow, but we need to discuss it internally, with urgency.

93. This email makes clear that Vale pressured TÜV SÜD to certify Dam 1 stability notwithstanding the contradictory stability/factor of safety findings. It further shows that ***this practice was not limited to Dam 1***, as the Vale representative, Felipe Rocha, is said to have indicated that another of Vale's dams—Forquilha III—was not passing stability tests but would be attested to by its auditor nonetheless.

94. When the next Dam Safety Audit for Dam 1 came due in September 2018, Tractebel informed Vale that the safety of Dam 1 could not be attested based on TÜV SÜD's factor of safety finding of 1.09. In response, Vale promptly replaced Tractebel with TÜV SÜD, who issued the Stability Condition Statement which was jointly signed by Vale.³¹

95. Further evidence of Vale's practice of obtaining inappropriate Stability Condition Statements has emerged since Dam 1's collapse. In mid-February, 2019, TÜV SÜD sent letters to the Minas Gerais state prosecutors' office (the "MPMG") and Vale informing them that it had retained experts to review TÜV SÜD's previously issued Stability Condition Statements for numerous Vale dams. TÜV SÜD stated that "[b]ased on the information available, ***the experts are currently unable to confirm the stability of the dams*** mentioned in the attached spreadsheet." The experts believed these dams' factors of safety may be lower than those indicated in the previous

³¹ In addition to the low factor of safety, TÜV SÜD's 2018 Dam Safety Audit reported numerous problems with the dam, including indications of internal and external erosion, damaged and clogged drainage tubes, and missing or inconsistent data for important monitoring systems related to the dam's water table and stability (piezometers, flowmeters, and inclinometers). Some of these issues had been previously reported to Vale but not resolved.

reports. The dams listed were: Forquilha I, II and IV, Dique Minervino, Sul Superior, Doutor, Dique Cordoa Nova Vista, Dique III, and Barragem VI. TÜV SÜD warned that any activity on the dams—even walking on them—“should be strictly avoided as they could trigger a failure.”

96. Moreover, as the Prosecutors’ Letter noted, following the Dam 1 collapse, *nine* of Vale’s other dams suddenly declared emergency levels ranging from 1 (potential risk on the structure safety) to 3 (the most critical level of emergency)³² despite having been rated as “low risk” in Vale’s filings with government regulators.³³ Those dams are: (1) Sul Superior dam in the Gongo Soco mine, in Barao de Cocais (on February 8, 2019); (2-3) B3 and B4 dams, in the Mar Azul mine in Nova Lima (on February 16, 2019); (4) Vargem Grande dam in the Vargem Grande complex, in Nova Lima (on February 20, 2019); (5-9) Forquilha I, Forquilha II, Forquilha III, and Grupo dams, in the Fábrica mine, in Ouro Preto (on February 20, 2019). The Prosecutors’ Letter considered this additional evidence that Vale had misconstrued the safety of its dams in regulatory filings.

I. Defendants Failed to Address Additional Alarming Events that Suggested a High Risk of Dam 1 Liquefaction

97. The CPI and Prosecutors’ Letter both discussed at length the evidence of three categories of alarming events that Vale failed to adequately respond to: (1) a failed attempt in June 2018 to install deep horizontal drains (“DHPs”) in the base of Dam 1 that caused dangerous water leaks at precisely the point where radar images suggest the dam liquefaction may have begun on

³² Under Article 37 from DNPM Ordinance number 70389/17, these emergency levels required executing the actions described in the PAEBM (Emergency action plan for mining dams), including the evacuation and relocation of hundreds of citizens and closing public roads.

³³ Under Brazilian regulations, the “Risk Category” is determined based on a numerical ranking of: (1) the technical characteristics of a dam (such as the height and volume of stored tailings); (2) the status of the emergency plan, and (3) the condition of the dam as determined by a visual inspection. The Risk Category does not consider a dam’s factor of safety or a dam’s associated potential damage (DPA, discussed previously at footnotes 13 and 26).

January 25, 2019; (2) abnormal readings in March 2018, December 2018, and January 2019 of the interferometric radar that was installed to monitor the Dam 1 structure; and (3) inconsistent readings detected in several piezometers (water pressure gauges) in January 2019.³⁴

98. First, in June 2018 Vale attempted to lower the water level in Dam 1 by installing DHPs. The installation of DHPs had been recommended by TÜV SÜD and various other auditors over the years as a measure to reduce Dam 1's risk of liquefaction. However, during the installation of the fifteenth DHP ("DHP 15"), water used in the drilling process was not returning through the ducts.³⁵ Piezometers indicated a rapid increase in water pressure. An increase in water pressure near the drill sites can increase the likelihood of failure of the entire dam by liquefaction; a rapid increase in water pressure somewhere in the tailings deposit can cause the rapid flow of water out of the dam and lead to failure by internal erosion. The DHP installation was immediately halted, and after three days of work on the dam base, water pressure was returned to prior levels.

99. Vale subsequently hired two consultants to assess the event and give an opinion on the impact and subsequent actions. On one consultant's first visit to Dam 1 for a field inspection on June 14, 2018, he found excessive moisture at two points in the vicinity of DHP 15. After excavating soil from two drainage pipes in these areas, there was a strong flow of water.³⁶ In the consultants' technical memorandum to Vale, the consultants indicated that "it is not prudent to continue the implementation of DHPs in the lower line" in part "due to the lack of better knowledge of this lower area."

³⁴ The same problem—inconsistent piezometer readings—had also been previously reported in 2018 in TÜV SÜD's 2018 Dam Safety Audit.

³⁵ According to TÜV SÜD's 2018 Dam Safety Audit, the flowmeters in Dam 1's drains were not working properly. Therefore, when the drilling water did not return through the ducts, the Vale engineers would not have known whether the excess water exited through internal drains, caused the water table to rise, or entered into the foundation of the dam.

³⁶ The accumulation of water in a dam is a major cause of liquefaction and of all other common modes of tailings dam failure.

100. Although Vale contracted with TÜV SÜD to identify and implement other methods of lowering the water table of Dam 1, Vale did not attempt any further improvements prior to Dam 1’s collapse despite TÜV SÜD’s dire warning to Vale directors in November 2018 that decommissioning Dam 1 should be a top priority because of its issues with liquefaction, and demanding an “extremely urgent” topographic study.

101. The CPI report also noted an ominous email sent on July 31, 2018 from Vale’s Executive Manager of Geotechnical Operations³⁷ regarding an analysis of Dam 1’s underlying foundation, stating it was “***darker than I thought.***”

102. Second, in March 2018, December 2018, and January 2019, there were abnormal readings of the interferometric radar that was installed to monitor the Dam 1 structure that Vale failed to address. For instance, an email on January 18, 2019³⁸ indicated that radar measurements showed “deformation” in Dam 1 starting in November 2018 and accelerating through December 2018 and January 2019. “Deformation” in this context means the downward motion of the dam—that the dam is slipping. It can be an indicator of a dam’s imminent failure. Interferometric radar monitoring is used because of its accuracy in detecting changes that may not be visible to the naked eye.

103. Likewise, in March 2018, abnormal interferometric radar readings were formally reported to Vale’s Geotechnical Operations team, but no concrete measures were taken. Rather,

³⁷ This email was sent by Joaquim Toledo, whom the CPI report describes as “the highest-ranking Vale employee in the geotechnical operations area, an experienced Mining Engineer with 27 years of work at Vale.” Elsewhere in the report, his title is listed as Executive Manager of Planning and Programming for the Southeast Corridor.

³⁸ The CPI report states that the email was dated December 18, 2018, however, the email describes deformation of Dam 1 increasing into January 2019, and the CPI report subsequently states that the email was sent just seven days before the dam collapsed (*i.e.*, January 18, 2019). It therefore appears that the December 2018 date was a typo.

the equipment operator was warned to “*take it slow and calm down.*”³⁹

104. Finally, between January 10, 2019 and January 24, 2019—the day before Dam 1’s tragic collapse—Defendants failed to address an urgent issue regarding inconsistent and missing readings in several piezometers (water pressure gauges) for Dam 1.⁴⁰ Specifically, Vale was alerted by email on January 23, 2019 to the issues with several January 10, 2019 piezometer readings but failed to attempt to verify the readings or otherwise follow up on them prior to the Dam 1 collapse.⁴¹

105. Vale’s Manager of Geotechnical Structures Management for Dam 1, Marilene Lopes,⁴² testified to the MPMG that the correct protocol to follow when Vale observed the piezometer readings from January 2019 should have been as follows:

[T]he good practices recommend that the operational geotechnicians of dam B1 should have gone immediately to the field and should have done the manual readings of the monitoring instruments in order to validate or not the automated piezometer readings; that in case the automated piezometer readings were validated, the deponent understands that the geotechnician in charge of the team should evaluate the risks and adopt the adequate proceedings, including those provided in the PAEBM”.

106. The PAEBM is the emergency action plan for Dam 1, which calls for evacuation of the surrounding area under appropriate circumstances.

107. Similarly, Campanha testified to the MPMG regarding the discrepancies in the piezometer readings on January 10, 2019 and the malfunctioning of five automated piezometers,

³⁹ This message came from Cesar Grandchamp, in an email sent on March 9, 2018 to the operator Tercio Andrade Costa, who understood the warning as “*mind your own business, stay quiet and do your job.*”

⁴⁰ According to a report cited by the CPI, Dam 1 had 94 piezometers installed throughout the dam, of which 46 were in the process of being automated by TÜV SÜD and two other contractors.

⁴¹ Indeed, inconsistent and missing piezometric readings were previously reported in TÜV SÜD’s 2018 Dam Safety Audit, but had apparently not been rectified as of January 2019.

⁴² In her testimony to the federal police, Lopes indicated that her immediate boss was Alexandre Campanha. She also stated that the people in charge of inspecting and monitoring the dam were Cristina Malheiros and Arthur Ribeiro.

indicating that the correct measure would have been “a team immediately going to the field to verify the physical conditions of the dam and do the manual reading of the monitoring instruments in order to validate or not the information previously obtained through the automated piezometer readings sent by TÜV SÜD...” He also testified that “if his son was working close to the dam... he would communicate immediately to the responsible sector to do a field evaluation, as well as to his son and any family member to leave the area”.

J. Investigations by the Federal Police, Federal Prosecutor, and Minas Gerais State Prosecutor

108. On March 1, 2019, the Minas Gerais state prosecutor’s office, the federal prosecutor’s office, and the federal police department jointly sent the Prosecutors’ Letter to Vale’s board of directors, setting forth their conclusions from the evidence reviewed as of that date and formally recommending the removal of nine Vale executives and reassignment or removal of five Vale employees from positions involving risk management. The Prosecutors’ Letter stated that:

...Vale SA’s corporate geotechnical department, created after the Mariana disaster with the purpose of improving the risk management of dams, systematically acted to get stability declarations for dams with structures that did not reach the legal parameters established by the company, so much so that on more than one occasion the corporate geotechnical sector substituted external auditors that refused to give false declarations[.]

109. The Prosecutors’ Letter also indicated that top officials at Vale were aware of these facts, stating that “the high officers of Vale SA were frequently fed with information related to the safety conditions of the structures under the company’s responsibility.”

110. As a result of their findings of systematic, improper conduct, the Prosecutors’ Letter formally recommended to Vale’s board of directors “the immediate removal of the undermentioned people from any function or activity in the companies belonging to the Vale SA group, forbidding their access to any building or vicinity, as well as sending an internal notice to Vale SA employees not to share with those people any matter that relates to their work.” Those

Vale executives were: Individual Defendant Schvartsman; (2) Individual Defendant Poppinga; (3) Lucio Flávio Gallon Cavalli, Director of Iron Ore and Coal Planning and Development; (4) Silmar Magalhães Silva, Southeast Operational Director; (5) Alexandre De Paula Campanha, Executive Director of Geotechnical Corporate Governance; (6) Marilene Christina Oliveira Lopes De Assis Araujo, Manager of Geotechnical Structure; (7) Joaquim Pedro De Toledo, Executive Manager of Southeast Planning and Programming; (8) Cesar Augusto Paulino Grandchamp, a geologist within the Southeast Planning and Programming Executive Management; and (9) Rodrigo Artur Gomes De Melo, Executive Manager of the Paraopeba mining complex.

111. It also recommended the “immediate removal” of five Vale employees from “any function or activity . . . related to risk management and/or safety monitoring of dams.” Those individuals were: (1) Felipe Figueiredo Rocha, an employee in the Geotechnical Risk Management Department; (2) Washington Pirete Da Silva, an engineer in the Geotechnical Risk Management Department; (3) Renzo Albieri Guimarães Carvalho, a Geotechnical Manager in Southeast Planning and Programming Executive Management; (4) Cristina Heloiza Da Silva Malheiros, the geotechnical engineer responsible for Dam 1 in the Geotechnical Management Department; (5) Artur Bastos Ribeiro, a geotechnical engineer in the Geotechnical Management Department.

112. The Prosecutors’ Letter gave a period of ten days for Vale’s Board to take action. On March 2, 2019, Schvartsman, Poppinga, Cavalli, and Silva submitted requests for temporary leaves of absence, which were accepted by Vale’s Board of Directors. On March 7, 2019, Vale’s Executive Board decided to comply with the other recommendations of the Prosecutors’ Letter, removing and relocating the listed employees.

K. Investigation by Brazilian Senate CPI

113. On March 13, 2019, Brazil’s Senate announced a CPI investigation into the causes of and responsibility for Dam 1’s collapse. On July 2, 2019, the CPI released its 400-page final

report of its findings and recommendations. The CPI stated, based on its review of documents and hearing testimony regarding the Dam 1 collapse, that “[t]he first and most important conclusion is that it was not an accident.” Rather, the report continues, the “Brumadinho tragedy was the result of a combination of factors. *At the root of them all is the mantra of cost reduction, applied to a dam that failed to contribute to the production and was turned into a simple item in some spending spreadsheet.*”

114. The CPI found that:

Vale management and the board knew the risks and decided to take them. Whoever calculated the risk, whoever assessed the risk and whoever decided what to do, or rather, what not to do, was aware that, behind reports and figures there was a concrete element: a huge dam of mud that could kill and destroy.

115. The CPI report also suggested that Defendants’ prior statements about Dam 1 safety were misleading, stating: “The breaking of Dam 1 puzzled the entire Brazilian engineering and geology community. *Watching from a distance and based solely on the statements and information provided by Vale, the impression would be that the dam broke without any apparent cause and without notice. It was not, however, what happened.*”

116. In reaching its conclusions, the CPI investigation focused on four key factual findings:

1. The Dam I was built and elevated with design, execution, and documentation deficiencies, especially in relation to its drainage system. 17 years after its acquisition by Vale, many of the problems had not been solved.

2. *One year before the tragedy, the dam gave many signs that there were serious risks, which were not properly addressed.*

3. The safety reports issued contradicted the PIESEM panel of experts’ recommendations to use internationally accepted standards. *The production, analysis, and review of reports suffered undue interference [by Vale], to ensure obtaining the legal requirement of the Stability Condition Statements (DCE).*

4. *The management and senior management of Vale, within their competence and assignments, were aware of the risks of Dam I and the necessary steps to*

increase its safety.

117. As a result of its factual findings, the CPI recommended indictments against Vale and numerous Vale executives, including Defendants Schvartsman and Poppinga. It also recommended changes to the regulatory regime concerning dam safety.

L. Minas Gerais' House of Representatives' Investigation ("State CPI")

118. On March 12, 2019, the House of Representatives of the state of Minas Gerais announced an investigation into the causes of the Dam 1 break. In the State CPI report of its findings and conclusions released on September 12, 2019, it summarized its important factual findings as follows:

From the hearings performed by this CPI and the documents analyzed over the last six months, we find that:

- Vale S.A. knew that B1 operated with a factor of safety far below the internationally recommended level of 1.3 - as it did in its other dams. Dam 1 operated with a safety factor of 1.09, insufficient to attest to the safety of the structure, according to documents to which the CPI had access. This index was included in a fraudulent stability report signed by TÜV Süd and presented by Vale S.A. to the supervisory bodies - and served to ensure the continued operation of the Córrego do Feijão Mine;
- In June and September 2018, TÜV Süd issued statements attesting to the stability of the dam, although it had a very low safety factor. The company therefore knew that there was a real possibility of liquefaction;
- Vale did not correctly inform the National Mining Agency - ANM - about the dimensions of the episode of hydraulic fracturing with mud and pressurized water overflow, which occurred on 6/11/2018, during an attempt to install the 15th Deep Horizontal Drain - DHP;
- Vale has not implemented any other method of lowering the dam's internal water table following the failure of the DHPs installation in June 2018;
- Vale disregarded alerts provided by automated piezometers and interferometric radar;
- Vale did not pay due attention to the incoming water from the source upstream of the dam, which may have contributed to the increase in its water table;
- Vale continued to detonate explosives at the Córrego do Feijão Mine pit between

June and September 2018, contrary to the technical recommendation of TÜV Süd, agreed to by Vale, which prohibited this practice as a safety measure for the dam. This is evidenced in the “fire plans” of the Córrego do Feijão Mine made available to CPI by the Minas Gerais Civil Police;

- Vale detonated explosives at the Córrego do Feijão Mine pit on January 25, 2019. If it occurred before the rupture, it may have been one of the triggers for the B1 rupture.

119. Additionally, the State CPI “identified opportunities that Vale had to prevent any dam rupture from causing such great damage to life and the environment,” which Vale did not attempt, as follows:

- Vale did not notify ANM of the actual state of the structure in the June and September 2018 audits. If it had been correctly informed, the administrative area of the mine could have been evacuated, sparing hundreds of lives;
- B1 had a Mining Dam Emergency Action Plan - PAEBM. That document said that *if it broke, the dam would come down abruptly and instantly*. Even so, Vale maintained, just below the dam, structures with constant presence of people, such as health post, offices and cafeteria.
- PAEBM also showed that employees just below the dam were condemned to die in the event of a breach. *The plan explicitly stated that they would need at least 5 minutes to escape the mud, but it would reach them in less than a minute.*
- And it must be emphasized: even if the time of arrival of the mud was compatible with self-rescue, the escape could have failed. It is *because the sirens, which should warn of the disruption and trigger the evacuation of the areas, simply did not sound at the time of the disruption.*
- In addition to the PAEBM, another document proves that Vale was aware of the magnitude of the socio-environmental consequences of a possible Dam 1 breakdown. This is the Monetized Risk Calculation of the structure, which studied a hypothetical dam break and valued its consequences financially, including people’s lives.

120. Based on these factual findings, the State CPI recommended civil and criminal prosecutions against Vale and numerous individuals, including Defendants Schvartsman and Poppinga.

M. Subsequent Company Disclosures

121. On June 10, 2019, Vale filed a Form 6-K with the SEC admitting that many of its high-hazard (DPA) dams had, in fact, failed to obtain Stability Condition Statements (DCEs) or experienced notable stability concerns identified by an independent engineer in one or more years prior to the Dam 1 collapse. The disclosure was made in response to a letter from The Church of England Pension Fund and Swedish Council of Ethics of the AP Funds requesting specific information concerning Vale’s tailings dam management. As part of its response, Vale provided a chart with detailed information regarding all of its tailings dams. This revealed multiple high-DPA dams that have failed to obtain DCEs for one or more years. For instance, Vale’s Forquilha III upstream tailings dam is classified by Vale as high DPA, and failed to obtain DCEs in 2010, 2011, 2012, 2014, 2015, and 2019. Similarly, Vale’s Grupo upstream tailings dam is high risk and failed to get DCEs in 2009, 2010, 2012, 2013, 2014, 2015, and 2019. As was true for Dam 1 as well, Vale disclosed that it does not have “full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure” for both of these dams (and many others). Such records are important tools used by auditors to assess dam stability.

122. For the years 2016, 2017, and 2018, the chart did not indicate a single dam that failed to obtain a DCE.

123. The Form 6-K also indicates the communities and numbers of people relocated due to either the Dam 1 collapse or to other Vale dams which had declared emergency levels 1 or 2 following the Dam 1 collapse, as follows:

- Brumadinho (Dam 1): 329 relocated;
- Barão de Cocais (Sul Superior dam): 458 people relocated;
- Macacos (dams B3 and B4): 318 people relocated;

- Nova Lima (Vargem Grande dam): 49 people relocated;
- Ouro Preto (Forquilha I, Forquilha II, Forquilha III dams and the Fábrica complex): 4 people relocated; and
- Rio Preto (water dam): 26 people relocated.

124. Additionally, in slides Vale released and filed with the SEC the same day, June 10, 2019, Vale indicated the applicable “emergency levels” of its dams, showing: (1) five dams in the highest emergency level, level 3, at which “[c]are is extended to people in the Secondary Safety Zone through educational measures and emergency evacuation drills”; (2) two dams in level two, indicating “the evacuation of people in the Self-rescue Zone is put in motion”; (3) 12 structures at level 1, “[s]ituation of instability, may require enhanced monitoring”; and (4) 80 dams at level zero, “normal situation, regular monitoring.”

V. DEFENDANTS PUBLICLY MISREPRESENTED AND CONCEALED MATERIAL FACTS THROUGHOUT THE CLASS PERIOD

A. July 28, 2016 Conference Call with Analysts

125. On July 28, 2016, Defendants held a conference call with analysts to discuss Vale’s second quarter 2016 financial performance. On the call, Defendant Poppinga responded to a question concerning efforts by Vale to find alternatives to upstream tailing dams in light of a potential ban on such dams that was under consideration by Brazilian regulators. Poppinga stated:

Yes. That is a difficult and -- but a very important question. We have, in fact, in the iron ore business, 148 tailing dams.

Now, what we are doing is independent of what will be changed potentially in the law, or in the licensing process -- what we are doing anyway in order to maximize our margins.

* * *

And there is another maybe item which we should put on the table. *No matter what will happen in terms of specifically the upstream construction method of tailing dams in Brazil in terms of legislation or restrictions, we must say that Vale -- we don't have those dams. Right? We don't have -- we practically have no upstream dams in our operation*

continuously. . . . So, that is something which -- it's very different from what other companies may be experiencing. Thank you.

126. At the time of these statements, Defendants knew or recklessly disregarded, *inter alia*, that Defendant Poppinga had ordered the closure of Dam 1, an upstream tailings dam, on July 6, 2016 due to a serious doubt about the dam, and that liquefaction analyses of Dam 1 from July 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure. Based on these and other facts set forth more fully in Section IV, above, the statements described in paragraph 125 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards. Having elected to speak about Vale's upstream tailings dams, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

B. October 27, 2016 Conference Call with Analysts

127. On October 27, 2016, Defendants held a conference call with analysts to discuss Vale's third quarter 2016 financial performance. At the conclusion of his opening remarks, Defendant Ferreira stated:

As I think you all know, ***we are driven by our commitment to safety to people and to preserve the environment.*** Moreover, we understand that it is important to all of our stakeholders, including the people in place[s] where we operate. **We are constantly looking to adapt and evolve by building [on] what we have seen, experience[d] and learn[ed].**

On that regard, on November 5, Samarco accident, we complete one year anniversary. And

since then, we stood by our commitment to do what is right.

128. At the time of these statements, Defendants knew or recklessly disregarded, *inter alia*, that Dam 1 had been closed on July 6, 2016 due to a serious doubt about the dam, that liquefaction analyses of Dam 1 from July 2016 showed extremely low factors of safety and a roughly 50% probability of failure, and that Vale nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraph 127 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards. Having elected to speak about Vale’s efforts to protect human safety and the environment, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

C. November 29, 2016 NYC Vale Day

129. On November 29, 2016, Vale held its annual Vale Day conference in New York City at the NYSE. In a presentation from the conference, which was filed with the SEC on Form 6-K, Vale discussed its progress on its sustainability initiatives. Under the heading, “[s]ustainability is one of Vale’s strategic pillars,” the presentation indicated with respect to safety, “[z]ero harm targeted throughout all operations.” The next page touted “[s]ignificant progress achieved,” including, under health and safety, “[r]isk management: 17% reduction in the number of incidents with high potential impact”.

130. At the time of these statements, Defendants knew or recklessly disregarded, *inter alia*, that Dam 1 had extremely low factors of safety and a roughly 50% probability of dam failure, and that Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraph 129 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards. Having elected to speak about Vale’s progress toward achieving “zero harm” throughout its operations, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

D. February 23, 2017 Form 6-K

131. On February 23, 2017, Vale filed a report on Form 6-K with the SEC (the “February 2017 6-K”). The February 2017 6-K details the Company’s results and procedures from the prior year. Under the heading, Risk Management, the February 2017 6-K states, in relevant part:

Vale considers that an effective risk management is key to support the achievement of the company objectives and to ensure the financial strength and flexibility of the company and the business continuity.

Therefore, *Vale has developed its risk management strategy in order to provide an integrated approach of the risks the company is exposed to, considering* not only the risks generated by variables traded in financial markets (market risk) and those arising from liquidity risk, but also the risk from counterparties obligations (credit risk) and *those relating to inadequate or failed internal processes, people, systems or external events (operational risk)*, among others.

132. Under “Risk management policy,” it further states:

The Board of Directors established a corporate risk management policy defining principles and guidelines applicable to this process in the company and the corresponding governance structure.

This policy determines that ***corporate risks should be measured and monitored, regularly, in an integrated manner, in order to ensure that the company overall risk level remains aligned with its strategic guidelines.***

The Executive Risk Management Committee, created by the Board of Directors, is responsible for supporting the Executive Board in the risk management decisions, issuing opinions and recommendations. It is also responsible for the supervision and revision of the principles and instruments of corporate risk management.

The Executive Board is responsible for the approval of the policy deployment into norms, rules and responsibilities and for reporting to the Board of Directors about such procedures.

The risk management norms and instructions complement the corporate risk management policy and define practices, processes, controls, roles, and responsibilities.

133. With regard to operational risk management, the February 2017 6-K states:

The operational risk management is the structured approach that Vale uses to manage uncertainty related to possible inadequate or failure in internal processes, people, systems and external events, in accordance with the principles and guidelines of ISO 31000.

The main operational risks are periodically monitored, ensuring the effectiveness of preventative and mitigating key controls in place and the execution of the risk treatment strategy (implementation of new or improved controls, changes in the risk environment, risk sharing by contracting insurance, provisioning of resources, etc.).

Therefore, ***the Company seeks to have a clear view of its major risks, the best cost-benefit mitigation plans and the effectiveness of the controls in place, monitoring the potential impact of operational risk*** and allocating capital efficiently.

134. At the time of these statements about Vale’s risk management, Defendants knew or recklessly disregarded, *inter alia*, that liquefaction analyses of Dam 1 finalized on July 15, 2016 and July 26, 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure, and that Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 131-133 were materially false and misleading because they

misrepresented or failed to disclose that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards. Having elected to speak about Vale’s risk management policies and practices, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

E. 2016 Annual Report filed April 11, 2017

135. On April 11, 2017, Vale filed its 2016 annual report on Form 20-F with the SEC. (the “2016 Annual Report”). The 2016 Annual Report states under “Regulatory matters” related to environmental regulations:

In May 2016, the state of Minas Gerais issued a decree ordering an immediate assessment of the stability conditions of the upstream dams and suspending new licensing procedures for building or heightening upstream dams, until the state environmental authority defined new rules and procedures. We have conducted extraordinary audits on the stability conditions of our upstream dams, and no anomalies were identified. We filed a report with local governmental authorities in September 2016. In March 2017, the state of Minas Gerais determined that upstream dams, or dams that have been once heightened by this method, that had their stability conditions attested by audit could be heightened by other constructive methods.

136. At the time of these statements, Defendants knew or recklessly disregarded, *inter alia*, that: Dam 1 had been closed in July 2016 due to serious doubts that arose concerning the dam; liquefaction analyses of Dam 1 in July 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure; and Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraph 135 were materially false and

misleading because they misrepresented or failed to disclose that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards. Having elected to speak about the stability condition of Vale’s upstream tailings dams, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

137. The 2016 Annual Report also discussed the risk factors applicable to Vale’s business and Vale’s risk management policies and efforts. Under the heading “RISK MANAGEMENT,” the 2016 Annual Report stated:

We developed an integrated framework for managing risk, which considers the impact on our business of not only market risk factors (market risk), but also risks arising from third-party obligations (credit risk), risks associated with inadequate or failed internal processes, people, systems or external events (operational risk) and risks associated with political and regulatory conditions in countries in which we operate (political risk), among others.

In order to achieve this objective and to further improve our corporate governance practices, our Board of Directors has established a company-wide risk management policy and an Executive Risk Management Committee. *The risk management policy requires that we regularly evaluate and monitor the corporate risks on a consolidated basis in order to guarantee that our overall risk level remains in accordance with our strategic guidelines.*

138. Additionally, under the Risk Management subheading, “Operational risk,” the 2016 Annual Report stated:

Operational risk management is the structured approach we take to manage uncertainty related to internal and external events. Internal events consist of inadequate or failed internal processes, people and systems, while external events include natural or third party-caused operational catastrophes, regulatory, political, economic or social actions taken by governments or other key stakeholders.

We mitigate operational risk with new controls and improvement of existing ones, new mitigation plans and transfer of risk through insurance. We seek a clear view of the major risks we are exposed to, the cost-benefit on mitigation plans and the controls in place to closely monitor the impact of operational risks and to efficiently allocate capital to reduce it.

139. The 2016 Annual Report also described several risk factors, including the health, safety, and environmental risks associated with Vale's business operations, as follows:

Our business is subject to environmental, health and safety incidents.

Our operations involve the use, handling, storage, discharge and disposal of hazardous substances into the environment and the use of natural resources, and the mining industry is generally subject to significant risks and hazards, including fire, explosion, toxic gas leaks, spilling of polluting substances or other hazardous materials, rockfalls, **incidents involving dams**, failure of other operational structures and incidents involving mobile equipment, vehicles or machinery. This could occur by accident or by **breach of operating and maintenance standards**, and could result in a **significant environmental and social impacts**, damage to or destruction of mineral properties or production facilities, **personal injury, illness or death of employees, contractors or community members close to operations, environmental damage**, delays in production, monetary losses and possible legal liability. Additionally, in remote localities, our employees may be exposed to tropical and contagious diseases that may affect their health and safety. Notwithstanding our standards, policies and controls, our operations remain subject to incidents or accidents that could adversely affect our business, stakeholders or reputation.

140. It also described operational risks, including the following:

Our business is subject to a number of operational risks that may adversely affect our results of operations, such as:

* * *

- **Accidents or incidents involving our** mines, industrial facilities and related infrastructure, such as **dams**, plants, railway and railway bridges, ports and ships.

141. At the time of these statements about Vale's risk management, Defendants knew or recklessly disregarded, *inter alia*, that liquefaction analyses of Dam 1 in July 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure and that Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in

paragraphs 137-140 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) certain of the risks Defendants purportedly warned about, such as “the breach of operating and maintenance standards,” had already materialized and were concealed by Defendants; and (4) Defendants systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards. Having elected to speak about Vale’s risk management policies and practices, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

142. The 2016 Annual Report also touted the Company’s commitment to keeping its workplace safe and minimizing environmental damage, as follows:

Commitment to sustainability

We are committed to promoting sustainable development, which means generating value for our shareholders and other stakeholders, and simultaneously improving health and safety of our workers, enhancing the well-being of the communities surrounding our operations and protecting the environment. This can be achieved through conscious and responsible management, corporate voluntary actions and cross-sectorial partnerships. ***Below is a list of measures illustrating our commitment to sustainability:***

- Since 2013, environmental and social actions are directly incorporated into our strategic planning. ***In 2016, we revised our Global Sustainability Policy to reflect health, safety, environment and community management improvement.*** We also follow standards for social action and principles on business and human rights, which are based on the Guiding Principles on Business and Human Rights of the United Nations Human Rights Council.

143. It further indicated that Vale’s Governance and Sustainability Committee was responsible for, among other things, “evaluating Vale’s performance with respect to sustainability

and recommending improvements based on our long-term strategic vision.”

144. At the time of these statements about Vale’s sustainability policy and actions, Defendants knew or recklessly disregarded, *inter alia*, that liquefaction analyses of Dam 1 in July 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure and that Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 142-143 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards. Having elected to speak about Vale’s sustainability policy and actions, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

145. The 2016 Annual Report was signed by the Individual Defendants Ferreira and Siani, and included SOX certifications signed by them, attesting to the disclosure of all fraud. It also contained certifications by Ferreira and Siani that “this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading[.]” These certifications were false and misleading for the reasons described in paragraphs 136, 141, and 144, above.

F. 2016 Sustainability Report

146. In or about April 2017, Defendants released their 2016 Sustainability Report, which is referenced in the 2016 Annual Report and other SEC filings, and available on the Company's website.

147. In the opening pages of the 2016 Sustainability Report, it states:

Respect to Life

"Life matters most" permeates Vale's activities, which strives to achieve Zero Damage by investing in prevention, process standardization, risk management, and in the Genuine Active Care culture – a concept which includes care for oneself, care for others, and allowing others to take care for you.

148. Additionally, in a section entitled "Letter from the CEO," Defendant Ferreira states that Vale has been issuing sustainability reports for 10 years under the guidelines of the Global Reporting Initiative. He further states:

We want to generate long-term value for the communities where we operate, respecting the environment and people's lives; increase our resilience with respect to economic cycles, and be flexible and capable of generating financial returns. We know the size of our responsibility and believe that development is only sustainable when the Vale and society grow together, sharing the generated value. ***This means building an economic, social, and environmental legacy in the regions where we are present, mitigating the impacts of our operations in the communities where we operate, and inducing sustainable practices throughout the entire value chain. These, alongside other issues such as human rights, labor rights, anticorruption, and environmental protection, are demonstrated in actions that are part of our commitment to the principles of the United Nations Global Compact.***

Life matters most at work, at home, and in our communities. We are responsible for making this a reality.

149. At the time of these statements about Vale's sustainability policy and actions, Defendants knew or recklessly disregarded, *inter alia*, that liquefaction analyses of Dam 1 in July 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure, and that Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016.

Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 147-148 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards. Having elected to speak about Vale's sustainability policy and actions, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

150. Vale touted its dam safety management and purported compliance with all applicable dam safety regulations in the 2016 Sustainability Report, as follows:

At Vale, dedicated and qualified teams are assigned the responsibility of dam safety management. Vale aims to operate its dams using advanced engineering techniques, following strict controls, monitoring their performances in a systemic way, and evaluating safety conditions through annual external audits.

At the federal level, *Vale's management of dams in Brazil complies with Law* No. 12,334/2010, which establishes the National Policy on Dam Safety, and two ordinances of the National Department of Mineral Production (DNPM). Ordinance No. 416/2012 establishes the National Register of Mining Dams and regulates the Mining Dams Safety Plan (PSB) and on the submission of the statement of dam stability conditions. Ordinance No. 526/2013 establishes conditions for the submission of the Mining Dam Emergency Action Plan (PAEBM).

In the State of Minas Gerais, State Council of Environmental Policy (COPAM) Normative Resolutions Nos. 62/2002 and 87/2005, supplemented by No. 124/2008, determine the execution of regular external audits. *In 2016, 145 dams were audited in the ferrous metals area, and the respective statements of stability conditions were filed within the deadline, in order to meet Vale's safety management requirements and legal parameters,* including the new Joint Resolution SEMAD/FEAM No. 2,372/2016 (Secretary of State for

Environment and Sustainable Development (SEMAD) and the State Foundation for the Environment (FEAM)). This Resolution establishes guidelines for conducting Extraordinary Tailings Dam Safety Technical Audits with upstream heightening, and Decree No. 46,993/2016, which deals with the issuance of a corresponding statement of stability conditions.

For all of the recommendations pointed out in audits, Vale prepares an Action Plan that is internally monitored by the auditors.]

As a result of the 151 audits, programmatic or corrective and/or preventive maintenance actions were recommended. As a result of the recommendations, several Action Plans were prepared, filed with the state environmental agency and DNPM, **which are duly followed up by Vale managers and auditors.**

The structures undergo visual inspections and are monitored by instruments that provide information on their structural behavior. The visual inspections are performed fortnightly and include a detailed checklist that allows for evaluating the conditions and changes in the structure.

The information gathered in inspections and in data obtained through monitoring instruments installed in the dams is recorded in auditable systems and analyzed by geotechnical engineers, who periodically evaluate if the conditions raised in the field and the readings from instruments are in accordance with the normal operating conditions of the structures.

In addition to inspection and monitoring routines, they undergo periodic maintenance, such as the cleaning of drainage and overflow structures, weeding, recovery of small erosions, restoration of slope coverage, among others, in order to ensure adequate conservation conditions for good performance. At Vale, all dams, even if no longer in operation, remain under its responsibility and are monitored, audited, and maintained normally under the same criteria and safety levels adopted during their operation.

151. The 2016 Sustainability Report also indicated the Company's actions with respect to its emergency action plan and dam safety plan, as follows:

Under the process of continuous improvement, the Emergency Response Plans for Dams (PAEBMs, in [P]ortuguese), for Vale's iron ore dams, were revisited in 2016, followed by various discussions with communities located in the vicinity of the dams, with state and municipal Civil Defense, and with regulatory agencies.

Initially, **Vale updated the PAEBMs of their 50 dams classified as High Potential Associated Damage (DPA) (DNPM Ordinance No. 416/2012), focusing on the processes of emergency communication and on the study of scenarios including flood zones.** Continuing the process of continuous improvement and operationalization and implementation of the emergency management of dams, the Vale has been conducting activities with communities located in the Self-rescue Zone (ZAS) and conducting a

process aiming to implement a mass communication systems, also in the ZAS, downstream of each one of its structures.⁴³

Regarding governance, *in 2016, a unified database was set up to manage the portfolio of Vale's iron ore dams. Named Geotechnical Risk Management (GRG, in [P]ortuguese), the system allows for the registration of any structure, documentation, projects, studies, inspection files, internal and external audit reports, and technical information, aiming to ensure that the Dam Safety Plan is up to date.* A specific module of the system was also developed to generate data on iron ore dams that will constitute the Annual Mining Report (RAL), available in 2017. *Thus, the GRG aims to continually improve reliability, speed, and visibility in access to information related to the structures and the management of iron ore dams.*

152. At the time of these statements about Vale's dam safety management practices and compliance with dam safety laws, Defendants knew or recklessly disregarded, *inter alia*, that Poppinga had ordered Dam 1 be closed in July 2016 when liquefaction analyses indicated extremely low factors of safety and a roughly 50% probability of dam failure, but Vale nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Additionally, Defendants knew or recklessly disregarded that if Dam 1 failed, it would come down abruptly and instantly, but they maintained administrative offices and a cafeteria immediately below the dam that required a minimum of five minutes to evacuate. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 150-151 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards. Having elected to speak about Vale's

⁴³ “Self-rescue Zones” are areas in which Vale, rather than the local government, is responsible for evacuating residents in the event of a dam emergency.

dam safety management practices and compliance with all applicable dam safety laws, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

G. May 16, 2017 Form 6-K

153. On May 16, 2017, Vale filed a Form 6-K with the SEC containing a presentation made to the Bank of America Merrill Lynch Global Metals, Mining and Steel Conference in Barcelona, Spain. The presentation was entitled "Reshaping Vale: a leaner and more competitive company," and it touted "[a] transformational leadership with three main pillars," including "[e]thics and sustainable development: [z]ero harm; [e]nhancement of relationship with government environment agencies." The presentation further stated that "[t]he revision of our values was the foundation for the company's transformation," noting the values: "[l]ife matters most", "[p]rize our planet", "[d]o what is right," "[v]alue our people," "[i]mprove together," and "[m]ake it happen." It further stated that "*[b]ased on these values, Vale achieved higher levels of sustainable development,*" indicating achievements in governance, environment, health and safety, and community. Under the environmental achievements, the presentation noted "[o]ver 8,200 km² of natural areas preserved, 5x as large as the total area occupied by the operations." Under health and safety, it noted "Annual Safety Reflection Day promoted for all employees and third-party workers" and "Zero Harm targeted throughout all operations."

154. At the time of these statements about Vale's sustainability achievements, Defendants knew or recklessly disregarded, *inter alia*, that liquefaction analyses of Dam 1 in July 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure, and that Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements

described in paragraph 153 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards. Having elected to speak about Vale’s sustainability achievements, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

H. May 22, 2017 Statements Quoted in *Época Negócios*

155. When Defendant Fabio Schvartsman took office on May 22, 2017, he touted the slogan, “***Mariana never again,***” and assured the public that his management would be focused on four pillars: performance, strategy, governance, and sustainability. In a speech to Vale’s employees, which was quoted in an *Época Negócios* article, Schvartsman stated:

To Vale, which is a natural resources company, sustainability is not an option, it is an obligation. True sustainability is about posture and attitude. Besides that, ***we should adopt together the slogan: Mariana never again. May this be the last time this company be involved directly or indirectly in a social and environmental disaster of Mariana’s proportion.*** I want to take together with you all the commitment to be a world reference in sustainability.

156. At the time of Defendant Schvartsman’s statements about Vale’s sustainability commitment, Defendants knew or recklessly disregarded, *inter alia*, that liquefaction analyses of Dam 1 in July 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure, and that Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV,

above, the statements described in paragraph 155 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards. Having elected to speak about Vale's sustainability commitment, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

I. May 30, 2017 Form 6-K

157. On May 30, 2017, Vale filed a Form 6-K with the SEC (the "May 2017 6-K"). In a section regarding Environmental Regulations, a subsection entitled "Dams," states:

In May 2016, the state of Minas Gerais issued a decree ordering an immediate assessment of the stability conditions of upstream dams and suspending new licensing procedures for the construction or lifting of upstream dams until the state environmental authority defined new rules and procedures. *Vale carried out extraordinary audits on the stability conditions of its upstream dams and no anomalies were identified.* Vale has filed reports with local government authorities in September 2016. In March 2017, the state of Minas Gerais determined that dams already altered by the upstream method, but had their stability conditions verified by audit, could be altered by other constructive methods.

158. The May 2017 6-K also discussed risk management, and stated, in pertinent part:

Regulation of other activities: *Vale's governance structure is based on policies with guidelines and principles that guide the Company's strategy, processes and actions. The main policies related to the environment and social performance are Vale's Global Sustainability Policy, revised in 2016, to include improvements in health, safety, environment and community management, the Global Climate Change Policy, and the Human Rights Policy.* The Company also follows standards of social action and commercial and human rights principles based on the Human Rights and Business Matrix of the United Nations Human Rights Council.

With regard to risk management, tailings dams are highly relevant, being subjected to periodic safety audits and also to operating and monitoring procedures to assess geotechnical stability.

159. At the time of these statements about Vale's risk management, dam safety management, and compliance with dam safety laws, Defendants knew or recklessly disregarded, *inter alia*, that liquefaction analyses of Dam 1 in July 2016 indicated extremely low factors of safety, implicating a roughly 50% probability of dam failure, and that Vale had nevertheless signed a Stability Condition Statement for Dam 1 in 2016. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 157-158 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards. Having elected to speak about Vale's risk management, dam safety management, and compliance with all applicable dam safety laws, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

J. December 6, 2017 NYC Vale Day

160. On December 6, 2017, Vale conducted its annual "Vale Day" event in New York City at the NYSE. At the event, Defendant Schvartsman made a presentation that included a discussion of the Company's sustainability initiative. Schvartsman stated in pertinent part:

Finally sustainability... We want to become known as a benchmark in this sector. For doing that, we have to focus in a much more systematic planning and execution to have a real sustainable approach, and we have to look beyond Vale's operations, beyond our fences...

But *the issue now is to go further than that, in order to really take care of the environment and the social conditions surrounding us.*

161. Additionally, Defendant Osorio made a presentation regarding Vale's sustainability initiatives. Osorio stated in pertinent part:

First of all, and most importantly, *safety is our top priority*... But I think the take away message today is that we are totally committed to this plan of becoming a leader in sustainability... *So we are just making sure that we have the proper and correct goals, indicators, organizational model and structure to deliver these results in this bold commitment.*

162. At the time of these statements about Vale's actions to improve its environmental and social responsibility, Defendants knew or recklessly disregarded, *inter alia*, that Poppinga had closed Dam 1 in July 2016 when it received liquefaction analyses indicating extremely low factors of safety and a roughly 50% probability of dam failure. Nevertheless, Vale signed a September 2016 Stability Declaration Statement for Dam 1, and another such Stability Declaration Statement in 2017 despite factor of safety scores far lower than the 1.3 standard recommended by PIESEM and purportedly accepted by Vale. Defendants further knew or recklessly disregarded that multiple 2017 risk analyses showed Dam 1 was at *two to three times* the acceptable failure risk by Company standards, and had an unacceptably high risk of liquefaction in particular. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 160-161 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards. Having elected to speak about Vale's actions to improve its environmental and social

responsibility, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

K. December 8, 2017 London Vale Day

163. A few days later, on December 8, 2017, Vale conducted its annual "Vale Day" event in London. Defendant Schvartsman made a presentation including commentary on Vale's sustainability initiative, as follows:

Regarding sustainability, we – our idea here is a systematic one. ***We think that we have to treat this in a different manner than we've been treating [it] in the past. We did a much more systematic planning and execution of all measures regarding sustainability, regarding both the environment and social, and we are starting to do that.***

164. Additionally, Defendant Osorio made a presentation about sustainability, and stated in pertinent part:

As you heard from Mr. Schvartsman, sustainability is one of the pillars to the company's growth and prosperity. ***I would like to announce that it is our commitment to become a leader in sustainability and are going to pursue that every day, and we are starting to pave this way as you heard before... Starting with our top priority, which is safety...*** and we will see a lot of progress in the sustainability arena because it's [an] essential pillar to our growth.

165. At the time of these statements about Vale's actions in furtherance of its sustainability and safety initiatives, Defendants knew or recklessly disregarded, *inter alia*, that Poppinga had closed Dam 1 in July 2016 when it received liquefaction analyses indicating extremely low factors of safety and a roughly 50% probability of dam failure. Nevertheless, Vale signed a September 2016 Stability Declaration Statement for Dam 1, and another such Stability Declaration Statement in 2017 despite factor of safety scores far lower than the 1.3 standard recommended by PIESEM and purportedly accepted by Vale. Defendants further knew or recklessly disregarded that multiple 2017 risk analyses showed Dam 1 was at ***two to three times*** the acceptable failure risk by Company standards, and had an unacceptably high risk of

liquefaction in particular. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 163-164 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards. Having elected to speak about Vale's actions in furtherance of its sustainability and safety initiatives, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

L. February 27, 2018 Form 6-K

166. On February 27, 2018, Vale filed a form 6-K containing its financial statements for the period ended December 31, 2017.

167. Under the heading "Risk management," the February 27, 2018 6-K stated:

Vale considers that an effective risk management is key to support the achievement of the company objectives and to ensure the financial strength and flexibility of the company and the business continuity. Therefore, ***Vale has developed its risk management strategy in order to provide an integrated approach of the risks the company is exposed to***, considering not only the risks generated by variables traded in financial markets (market risk) and those arising from liquidity risk, but also the risk from counterparties obligations (credit risk) and those ***relating to inadequate or failed internal processes, people, systems or external events (operational risk), among others.***

a) Risk management policy

The Board of Directors established a corporate risk management policy defining principles and guidelines applicable to this process in the company and the corresponding governance structure.

This policy determines that ***corporate risks should be measured and monitored, regularly, in an integrated manner, in order to ensure that the company overall risk level remains***

aligned with its strategic guidelines.

The Executive Risk Management Committee, created by the Board of Directors, is responsible for supporting the Executive Board in the risk management decisions, issuing opinions and recommendations. It is also responsible for the supervision and revision of the principles and instruments of corporate risk management.

The Executive Board is responsible for the approval of the policy deployment into norms, rules and responsibilities and for reporting to the Board of Directors about such procedures.

The risk management norms and instructions complement the corporate risk management policy and define practices, processes, controls, roles and responsibilities. The Company may, when necessary, allocate specific risk limits to management activities, including but not limited to, market risk limit, corporate and sovereign credit limit, in accordance with the acceptable corporate risk limit.

168. Under the subheading, “(g) Operational risk management,” the form 6-K stated:

The operational risk management is the structured approach that Vale uses to manage uncertainty related to possible inadequate or failure in internal processes, people, systems and external events, in accordance with the principles and guidelines of ISO 31000.

The main operational risks are periodically monitored, ensuring the effectiveness of preventive and mitigating key controls in place and the execution of the risk treatment strategy (implementation of new or improved controls, changes in the risk environment, risk sharing by contracting insurance, provisioning of resources, etc.).

Therefore, ***the Company seeks to have a clear view of its major risks, the best cost-benefit mitigation plans and the effectiveness of the controls in place, monitoring the potential impact of operational risk and allocating capital efficiently.***

169. At the time of these statements about Vale’s risk management policies and practices, Defendants knew or recklessly disregarded, *inter alia*, that Vale had closed Dam 1 in July 2016 when it received liquefaction analyses indicating extremely low factors of safety and a roughly 50% probability of dam failure. Nevertheless, Vale signed a September 2016 Stability Declaration Statement for Dam 1, and another such Stability Declaration Statement in 2017 despite factor of safety scores far lower than the 1.3 standard recommended by PIESEM and purportedly accepted by Vale. Defendants further knew or recklessly disregarded that multiple 2017 risk analyses showed Dam 1 was at ***two to three times*** the acceptable failure risk by Company

standards, and had an unacceptably high risk of liquefaction in particular. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 167-168 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; and (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards. Having elected to speak about Vale's risk management policies and practices, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

M. March 20, 2018 Form 6-K

170. On March 20, 2018, Vale filed a Form 6-K with the SEC, which provided material updates to the corporate governance structure of the Company. Of note, the 6-K provides that the Board of Directors approved new Internal Rules for its Compliance and Risk committee. The March 20, 2018 6-K provides in relevant part:

The mission of Vale's Compliance and Risk Committee is to advise Vale's Board of Directors, including by proposing improvements related to its area of work, in order to increase the efficiency and quality of the decisions of this collective body and *ensure that the Company's operations are conducted in conformity with the law, ethics, and internal controls.*

171. The March 20, 2018 6-K further states that:

The Compliance and Risk Committee shall be responsible for: (i) monitoring that the Company has structure, processes, practices, mechanisms, and systems, among others, that *ensure compliance with all legal and regulatory requirements and demands applicable to the Company*; (ii) ensuring the Company's adoption of improvement of good practices of compliance and integrity, including *evaluating events of potential conflicts of interest*;

. . . (vii) *evaluating the procedures adopted by the company concerning the effectiveness of processes and controls to identify, assess, monitor and manage risk;* (viii) *monitoring Vale's integrated risk map, as well as proposing improvements on mitigation plans . . . [.]*

172. Further, Vale made representations about its Sustainability Committee in the March 20, 2018 6-K, as follows:

The mission of Vale's Sustainability Committee is to advise Vale's Board of Directors, including proposing improvements related to its area of work, in order to increase the efficiency and quality of the decisions of this collective body and *ensure that the Company's operations are conducted in conformity with law, ethics, and internal controls...*

* * *

The Sustainability Committee is responsible for: . . . (ii) evaluating the Company's policies and conduct related to Safety, the Environment, Health, Social Actions, Communication and Institutional Relations; . . . (viii) *monitoring all operational risks and controls from the perspective of the integrated risk map, including risks to Safety, the Environment, Health and Social Actions and risks to reputation, as well as proposing improvements in mitigation plans . . . [.]*

173. At the time of these statements about the actions of Vale's Compliance and Risk Committee and Sustainability Committee, Defendants knew or recklessly disregarded, *inter alia*, that Vale had closed Dam 1 in July 2016 when it received liquefaction analyses indicating extremely low factors of safety and a roughly 50% probability of dam failure. Nevertheless, Vale had signed Stability Declaration Statements for Dam 1 in 2016 and 2017 was pressuring its 2018 auditor to issue Stability Declaration Statements, despite the dam's continued failure to achieve the requisite factor of safety. Defendants further knew or recklessly disregarded that multiple 2017 risk analyses showed Dam 1 was at *two to three times* the acceptable failure risk by Company standards, and had an unacceptably high risk of liquefaction in particular. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 170-172 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability

of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards; and (4) Vale's third-party dam safety auditor had a financial conflict of interest, and issued Stability Condition Statements under fear of economic reprisal from Vale. Having elected to speak about the actions of Vale's Compliance and Risk Committee and Sustainability Committee, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

N. April 10, 2018 *Valor Econômico* Article

174. In an April 10, 2018 *Valor Econômico* article entitled, “The state of the dams today is ‘impeccable’, says Vale’s president,” Defendants boasted that Vale’s tailings dams were in “impressive” and “impeccable” condition:

Vale’s tailing dams are in a state of “**impressive**” **quality**, the president of the mining company Fabio Schvartsman assured. The executive says that as soon as he took office last year, he asked for a review of the conditions of the dams and the result was very positive.

“As soon as I started as president, I thought about the state of the dams. If there was another accident like Mariana’s [in Minas Gerais, when a Samarco dam collapsed and hit the region and Doce river], my management would be short”, he said at an Itaú event in São Paulo. “I don’t know if this work was done after Mariana or if it was already like that, but today the dams are impeccable.”

In the executive’s opinion, sustainability is part of the core business, or Vale’s core business. He points out that it is necessary for the mining company to be environmentally, socially and economically sustainable for its survival, and that the three aspects are interconnected.

175. Vale’s statements quoted in the *Valor Econômico* article described above were materially false and misleading because many of Vale’s tailings dams were not in “impressive” or

“impeccable” condition, and at least one dam—Dam 1 of the Córrego do Feijão mine—had a high probability of failure. The statements are also materially misleading because they omitted and failed to disclose that: (1) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (2) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards; and (3) Vale’s third-party dam safety auditor had a financial conflict of interest, and issued Stability Condition Statements under fear of economic reprisal from Vale. Having elected to speak about the condition of Vale’s dams, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

O. 2017 Annual Report filed April 13, 2018

176. On April 13, 2018, Vale filed its 2017 annual report on Form 20-F with the SEC, which provided its financial results and position for the fiscal year ended December 31, 2017 (the “2017 Annual Report”).

177. The 2017 Annual Report described Brazilian regulation of mining dams as follows:

In May 2017, the DNPM (predecessor to the ANM) created new obligations for companies operating mining dams in Brazil, primarily:

Audit: Companies operating mining dams must conduct two annual stability audits for each dam and prepare a stability condition report. Specifically in the State of Minas Gerais, these audits and reports must be prepared by external auditors.

Periodic Safety Reviews: The stability condition report must include detailed analysis of all dam’s documentation impacts on surrounding communities, including hazards and failure impact studies. Companies operating mining dams classified as high associated potential damage (DPA) must complete these studies by June 2018, while those for medium-DPA mining dams must be completed by December 2018 and those for low-DPA mining dams must be completed by June 2019.

Emergency Action Plan Training: Companies operating high-DPA mining dams must conduct two annual emergency action plan training sessions for their employees.

Monitoring: Video monitor must be implemented for all high-DPA mining dams by June 2019.

178. Additionally, Vale described the responsibilities of its Compliance and Risk Committee, in part, as follows:

The Compliance and Risk Committee, which is responsible for (i) ***monitoring that Vale has the structure, processes, practices, mechanisms and systems, among others, in place to ensure compliance with all applicable legal and regulatory requirements;*** (ii) ***ensuring Vale's adoption and improvement of compliance best practices and integrity, including evaluating potential conflicts of interest;*** (iii) ensuring the effectiveness and compliance of Vale's policies and normative documents with the legal and regulatory requirements applicable to its business and activities; (iv) monitoring the suitability, strength and performance of all of Vale's internal control systems and proposing improvements; (v) monitoring the scope of activities and effectiveness of the departments in charge of Vale's corporate governance, compliance, corporate integrity, risk management and controls and proposing improvements; (vi) supporting the Board of Directors in setting risk exposure limits; (vii) ***evaluating procedures adopted concerning the effectiveness of processes and controls to identify, assess, monitor and manage risk;*** (viii) ***monitoring Vale's integrated risk map, as well as proposing improvements in risk mitigation plans . . . [.]***

179. The 2017 Annual Report also described the Company's risk factors and risk management policies and practices. With regard to the Company's operational risks, it stated, “[o]ur business is subject to a number of operational risks that may adversely affect our results of operations, such as . . . [a]ccidents or incidents involving our mines, industrial facilities and related infrastructure, such as dams, plants, railway and railway bridges, ports and ships.”

180. It described the health, safety, and environmental risks to the Company's business, as follows:

Our business is subject to environmental, health and safety incidents.

Our operations involve the use, handling, storage, discharge and disposal of hazardous substances into the environment and the use of natural resources, and the mining industry is generally subject to significant risks and hazards, including fire, explosion, toxic gas leaks, spilling of polluting substances or other hazardous materials, rockfalls, ***incidents***

involving dams, failure of other operational structures and incidents involving mobile equipment, vehicles or machinery. This could occur by accident or by breach of operating and maintenance standards, and could result in a significant environmental and social impacts, damage to or destruction of mineral properties or production facilities, personal injury, illness or death of employees, contractors or community members close to operations, environmental damage, delays in production, monetary losses and possible legal liability.

181. Under the heading “RISK MANAGEMENT,” the 2017 Annual Report stated:

The purpose of our risk management strategy is to promote enterprise-wide risk management that supports the achievement of our objectives, financial strength and flexibility and business continuity.

We developed an integrated framework for managing risk, which considers the impact on our business of not only market risk factors (market risk), but also ***risks associated with inadequate or failed internal processes, people, systems or external events (operational risk)***, risks arising from third-party obligations (credit risk), risks from exposure to legal penalties, fines or reputational losses associated with failure to act in accordance with applicable laws and regulations, internal policies or best practices (compliance risk), and risks associated with political and regulatory conditions in countries in which we operate (political risk), among others.

In order to achieve this objective and to further improve our corporate governance practices, our Board of Directors has established a company-wide risk management policy and a Compliance and Risk Committee. ***The risk management policy requires that we regularly evaluate and monitor the corporate risks on a consolidated basis in order to guarantee that our overall risk level remains in accordance with our strategic guidelines.***

182. Additionally, under the subheading, “Operational risk,” the 2017 Annual Report stated:

Operational risk management is the structured approach we take to manage uncertainty related to internal and external events. Internal events consist of inadequate or failed internal processes, people and systems, while external events include natural or third party-caused ***operational catastrophes***, regulatory, political, economic or social actions taken by governments or other key stakeholders.

We mitigate operational risk with new controls and improvement of existing ones, new mitigation plans and transfer of risk through insurance. We seek a clear view of the major risks we are exposed to, the cost-benefit on mitigation plans and the controls in place to closely monitor the impact of operational risks and to efficiently allocate capital to reduce it.

183. At the time of the statements in paragraphs 177-182 above, concerning Vale’s risk

management policies and practices and compliance with applicable law, Defendants knew or recklessly disregarded, *inter alia*, that Dam 1 was at an unacceptably high risk of liquefaction and failure since at least July 2016 and continuing through 2018. Nevertheless, Vale had signed Stability Declaration Statements for Dam 1 in 2016 and 2017 and was pressuring its 2018 auditor to issue Stability Declaration Statements, despite the dam's continued failure to achieve the requisite factor of safety. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 177-182 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) certain of the risks Defendants purportedly warned about, such as "the breach of operating and maintenance standards," had already materialized and were concealed by Defendants; (4) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards; and (5) Vale's third-party dam safety auditor had a financial conflict of interest, and issued Stability Condition Statements under fear of economic reprisal from Vale. Having elected to speak about Vale's risk management policies and practices and compliance with applicable laws, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

184. Additionally, the 2017 Annual Report stated that the Company was committed to keeping its workplace safe and minimizing environmental damage as follows:

Commitment to Sustainability: We are committed to becoming a sustainability benchmark through a comprehensive approach based on systematic planning and execution,

prioritizing risk and impact management (seeking to achieve zero harm to our employees and surrounding communities) and establishing a positive social, economic and environmental legacy in the places where we operate. Below is a list of measures illustrating our commitment to sustainability:

Since 2013, environmental and social actions are directly incorporated into our strategic planning. In 2017, we joined the International Council on Mining and Metals (ICMM), the most important association in the mining industry, reaffirming our commitment to sustainable development. Also in 2017, we joined the Task Force on Climate-related Financial Disclosures (TCFD). The purpose of the TCFD is to create a set of recommendations to improve the quality of voluntary disclosure of climate-related information.

* * *

We are committed to improving the health and safety of our workers. Our total recordable injury frequency performance in 2017 was 2.0 per million hours worked, slightly higher than the frequency of 1.89 per million hours worked recorded in the previous year, although demonstrating a 24% improvement over the last five years.

We follow standards for social action in accordance with international guidelines, including principles on business and human rights, which are based on the Guiding Principles on Business and Human Rights of the United Nations Human Rights Council.

185. Further to its sustainability commitment, the 2017 Annual Report describes the responsibilities of the Company's Sustainability Committee as follows:

The *Sustainability Committee*, which is responsible for (i) evaluating Vale's sustainability strategy, and ensuring that it is considered when setting overall strategy; (ii) *evaluating Vale's policies and conduct related to Safety, the Environment, Health, Social Actions, Communication and Institutional Relations*; (iii) evaluating Vale's performance regarding sustainability aspects and proposing improvements based on a long-term vision; (iv) *aiding in setting, evaluating and monitoring the company's sustainability indicators and proposing improvements*; (v) *evaluating and proposing Vale's adherence to national or international initiatives or agreements related to socio-environmental responsibility matters, and monitoring the preparation and disclosure of the sustainability report*; . . . (viii) *monitoring all operational risks and controls from the perspective of the integrated risk map, including risks to safety, the environment, health and social actions and reputational risks, as well as proposing improvements in risk mitigation plans*; (ix) preparing and approving the Sustainability Committee's annual work plan; and (x) proposing analysis and evaluation of topics under its responsibility.

186. At the time of the statements in paragraphs 184-185 above, concerning Vale's efforts to become a leader in sustainability, Defendants knew or recklessly disregarded, *inter alia*,

that Dam 1 was at an unacceptably high risk of liquefaction and failure since at least July 2016 and continuing through 2018. Nevertheless, Vale had signed Stability Declaration Statements for Dam 1 in 2016 and 2017 and was pressuring its 2018 auditor to issue Stability Declaration Statements, despite the dam's continued failure to achieve the requisite factor of safety. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 184-185 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards; and (4) Vale's third-party dam safety auditor had a financial conflict of interest, and issued Stability Condition Statements under fear of economic reprisal from Vale. Having elected to speak about Vale's efforts to become a leader in sustainability, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

187. The 2017 Annual Report was signed by Defendants Schvartsman and Siani, and included SOX certifications signed by them, attesting to the disclosure of all fraud. It also contained certifications by Schvartsman and Siani that "this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading[.]" These certifications were false and misleading for the reasons described in paragraphs 183 and 186,

above.

P. 2017 Sustainability Report

188. In or about April 2018, Defendants released their 2017 Sustainability Report, which is mentioned generally in the 2017 Annual Report and other SEC filings, and available on the Company's website. In a section entitled, "Dam and mineral residues management," the 2017 Sustainability Report stated:

Vale maintains the management of its dams in permanent alignment and updating with the good and strictest international practices, standards of which exceed the legal requirements. In this sense, it bears emphasizing that the Brazilian dam safety legislation is quite stringent, also based on good international practices and very judicious, both in terms of safety management requirements and emergency management.

In general, society's knowledge and legislation advance at the pace of events and learning. With respect to dams, Vale is dedicated to advancing the dam safety movement and has contributed in a transparent manner to discussions at several forums, whether technical, legislative or civil society in general.

Among the international standards used as reference, we highlight the guidelines of the International Committee of Large Dams (ICOLD) and the Mining Association on Canada (MAC). International specialists and external auditors recognize Vale as a model for risk management in the global industry.

The strictness adopted is a demonstration of the our [sic] understanding that efficient dam management is a vital aspect not only for for [sic] Vale operations and its workforce, but also for the communities surrounding these structures.

In the Ferrous area, Vale's Integrated Risk Management System for geotechnical structures is based on three main pillars: People, Processes and Information Systems. In the People pillar, specialized teams are dedicated to controlling Vale's dams, deploying qualified professionals at the operation sites to take care of the structures day-to-day, and at the offices to develop projects, studies and analyses to assure safety and reduce structural risks.

In the Processes pillar, procedures are organized in Safety Management, Risk Management and Emergency Management throughout the life cycle of the structure, from design implementation, operation, maintenance and monitoring. In all these phases, the prognosis of the risks and the state of our readiness in case of an emergency.

In the Information Systems pillar, the Ferrous area has two systems that support geotechnicians with information for fast and effective decision-making. One of them is Geotec, which stores structural maintenance and monitoring data. The other is

Geotechnical Risk Management (CRG, acronym in Portuguese), which stores technical information on the structures, the Dam Safety Plan and information on risk analyses.

In addition to applying best practices pertaining to dam safety management, Vale submits its structures to audits conducted by specialized external consultants, and rigorously complies strictly with applicable legislation.

Another highlight this year was implementing the International Panel of Experts on the Ferrous area, composed of international and national technicians who work in risk management, geotechnics and water resources. The panel's purpose is to evaluate governance, processes, studies, projects and technical analyses of geotechnics and hydrology.

189. The 2017 Sustainability Report described Vale's dams in another subsection titled "Managed structures," as follows:

The Ferrous area, responsible for managing iron ore dams in Brazil, closed 2017 with 150 dams and dikes designed to contain tailings, sediments and water. Regarding the size of these structures' reservoirs, 80% are considered small, 14% are medium-sized, and only 6% are large. Of the small dams, 71% have reservoirs with volumes of less than 500 thousand m³. **At the end of the year, the area ended another cycle of external dams auditing, in which 100% of the audited structures were certified to be in stable condition, physically and hydraulically.**

190. Additionally, in a section entitled "Investments," the 2017 Sustainability Report indicated that the Iron Ore Department had spent approximately US \$182 million on managing its dams, including the "maintenance, monitoring, improvement works, audits, risk analyses, revisions to the Mining Dams Action Plans for Emergencies (MDAPE) and warning systems implementation, among other services." It also indicated that the Company was installing video monitoring and automated instrumentation for its dams, to be completed by 2019 in accordance with applicable dam safety laws.

191. Under "External audits and inspections," the 2017 Sustainability Report stated:

In 2017, external audits were carried out on 107 structures in the Ferrous area, located in Brazil. **All of them had their physical and hydraulic stability certified, and were issued Statements of Stability Condition** (DCE, acronym in Portuguese) by the responsible auditors. Also in 2017, Vale hosted three meetings of the Panel of Experts.

192. It also indicated that Vale had received "seven official notifications" from DNPM

regarding Vale's Ferrous dam management but that they were either meritless or concerned only formal errors, and did not pertain to hydraulic or physical safety of any of the structures.

193. Under "Goals for 2018," the 2017 Sustainability Report stated:

As a goal for 2018 in the Ferrous area, *the company will continue to improve its management of structures*. Vale's main objectives are to decommission some of its dams and obtain Statements of Stability, within the scope of the External Audit and the Periodic Dam Safety Review. Moreover, Vale is scheduled to continue its efforts to implement alert systems and risk analyses, automate monitoring processes, increase closeness with social and public authorities, and maintain the International Panel of Experts.

194. At the time of Vale's statements regarding its application of best practices in dam safety management and strict compliance with applicable dam safety laws in the 2017 Sustainability Report described in paragraphs 188-193, above, Defendants knew or recklessly disregarded, *inter alia*, that Dam 1 was at an unacceptably high risk of liquefaction and failure since at least July 2016 and continuing through 2018. Nevertheless, Vale had signed Stability Declaration Statements for Dam 1 in 2016 and 2017 and was pressuring its 2018 auditor to issue Stability Declaration Statements, despite the dam's continued failure to achieve the requisite factor of safety. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraphs 188-193 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale's high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards; and (4) Vale's third-party dam safety auditor had a financial conflict of interest, and issued Stability Condition Statements under fear of economic reprisal from Vale. Having elected to speak about Vale's dam safety management practices, Defendants violated their duties

to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

195. Additionally, the 2017 Sustainability Report discussed emergency rescue and safety plan information for its ferrous mineral dams as follows:

In operating the Iron Ore Department in Brazil, 18 municipalities are within the self-rescue zone, the region in which accident warnings are the responsibility of the company rather than the competent authorities. Of these, 16 are in Minas Gerais, one is in Mato Grosso do Sul, and one is in Pará. The estimated population in the first seven kilometers downstream of the dams, in the direction of the current, consists of approximately 20 thousand people in the flood stain area.

In compliance with Federal Law no. 12,334 and DNPM regulations 416/2012 and 526/2013, both replaced by DNPM n. 70.389 / 2017, **Vale has filed since 2015 the Mining Dam Emergency Action Plans** (PAEBM, acronym in Portuguese) referring to its structures. **Since then, it has maintained an intense process for identifying opportunities for improvement, which is reflected in periodic updates with a new version filed in 2016,** and current work to revise the file in the first half of 2018.

The company maintains a permanent and joint project with the Civil Defense Coordinator's Offices of these municipalities, to assure these plans' effectiveness. In 2016 and 2017, contact was maintained with the communities of all the mapped areas, which made visible the context of coexistence with the dams.

The project also implemented a survey to collect information, enabling the creation of emergency maps detailing escape routes, muster stations and alert system implementation.

Plans for the orderly return to communities were also started, to present these plans in an integrated manner that will enable drills to perform in 2018. Thus, we consolidated an emergency operational routine to assure all agents are properly qualified and readied, including employees and the community. **These actions are preventive, as all the structures in the Ferrous area are completely normal and stability-certified by the audit completed in September 2017.**

196. At the time of the statements in paragraph 195, above, regarding Vale's dam safety management and emergency action plans, Defendants knew or recklessly disregarded that Dam 1 was at an unacceptably high risk of liquefaction and failure, and that if it failed, it would come down abruptly and instantly, but administrative offices and a cafeteria located below the dam

would require a minimum of five minutes to evacuate. Therefore, based on these and other facts set forth more fully in Section IV, above, the statements described in paragraph 195 were materially false and misleading because they misrepresented or failed to disclose that: (1) at least one of Vale’s high-hazard tailings dams, Dam 1, had a high probability of failure; (2) Vale’s dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (3) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale’s own purported safety standards; and (4) Vale’s third-party dam safety auditor had a financial conflict of interest, and issued Stability Condition Statements under fear of economic reprisal from Vale. Having elected to speak about Vale’s dam safety management and emergency action plans, Defendants violated their duties to disclose these material facts so as to render Defendants’ statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

Q. December 11, 2018 ESG Webinar

197. On December 11, 2018, Vale conducted an Environmental, Social, and Governance Webinar (the “ESG Webinar”) which discussed, among other topics, Vale’s iron ore tailings dam management. In the ESG Webinar materials, Vale stated: “[*all of Vale’s iron ore dams are safe and operating within normal limits.*” Additionally, the materials stated that “*100% of Vale’s iron ore dams have their Stability Dam Declaration issued by the External Auditors,*” and further assured that “[t]he panels of national and international experts are of great importance and contribute by bringing a critical view on Vale’s management model, the methodologies used throughout the process and acting as consultants on safety issues”.

198. Vale’s statements in the ESG Webinar described in paragraph 197 above were materially false and misleading because at least one dam—Dam 1—was not safe, but rather, had

a high probability of failure. The statements are also materially misleading because they omitted and failed to disclose that: (1) Vale's dam risk management and sustainability practices and policies were insufficient and/or insufficiently implemented in light of the known risks to human life and the environment posed by Dam 1; (2) Vale systematically acted to get Stability Condition Statements for dams that were not stable and/or did not meet Vale's own purported safety standards; and (3) Vale's third-party dam safety auditor had a financial conflict of interest, and issued Stability Condition Statements under fear of economic reprisal from Vale. Having elected to speak about the condition of Vale's dams, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

R. January 28, 2019 Form 6-K

199. Following the collapse of Dam 1, on January 28, 2019 Vale filed a form 6-K with a press release updating the public concerning the history and recent developments with regard to Dam 1. In the release, Defendants continued to falsely assert that Dam 1 was certified as stable prior to its collapse:

The Dam I had Stability Condition Statements issued by TÜV SÜD do Brasil, an international company specialized in Geotechnics. The Stability Condition Statements were issued on 6/13/18 and 9/26/18, related to the Periodic Safety Review of Dams and Regular Dam Safety Inspection processes, respectively, as determined by the DNPM Decree 70.389/2017. **The dam had a Safety Factor in accordance with the world's best practices and above the reference of the Brazilian Standard. Both of the abovementioned stability declarations attest to the physical and hydraulic safety of the dam.**

200. Vale's statements in the January 28, 2019 form 6-K and press release described in paragraph 199 above were materially false and misleading because Dam 1 did not have a factor of safety in accordance with best practices or Vale's standards, and Defendants had systematically acted to get Stability Condition Statements for Dam 1 despite this fact. The statements are also materially false and misleading because they omitted and failed to disclose that: (1) Defendants

were aware that Dam 1 had a high probability of failure throughout the Class Period; and (2) Vale's third-party dam safety auditor for Dam 1 had a financial conflict of interest, and issued Stability Condition Statements for Dam 1 under fear of economic reprisal from Vale. Having elected to speak about Dam 1's stability condition pre-collapse, Defendants violated their duties to disclose these material facts so as to render Defendants' statements not misleading. Moreover, had such material facts been disclosed, it would have reasonably called into doubt the truth of the above statements.

VI. ECONOMIC LOSS AND LOSS CAUSATION

201. During the Class Period, as detailed herein, Defendants engaged in a course of conduct that artificially inflated the price of Vale Securities and operated as a fraud or deceit on the Class Period purchasers of Vale Securities by making the materially false and misleading statements and omissions recited above.

202. When the truth regarding the risk of Vale's tailing dams and its inadequate dam maintenance and safety certifications was disclosed, and the concealed risks materialized, the price of Vale Securities declined precipitously as the prior artificial inflation was removed from the price of the shares. As a result of their purchases of Vale Securities at artificially inflated prices during the Class Period, Plaintiff and other members of the Class suffered a substantial economic loss (i.e., damages under the federal securities laws). The price decline in Vale Securities was a direct result of the nature and extent of the materially false and misleading statements and omissions revealed to investors and the market. Thus, the Defendants' wrongful conduct, as alleged herein, directly and proximately caused the damages suffered by Plaintiff and the Class.

203. The truth about the risk of Vale's tailing dams and its inadequate dam maintenance and safety certifications was disclosed through a series of disclosures beginning with the news of the Dam 1 collapse on January 25, 2019 and concluding with related news on February 6, 2019.

204. **January 25, 2019.** On Friday January 25, 2019, multiple news outlets reported that one of Vale’s tailings dam had burst at its Córrego do Feijão iron ore mine. Vale confirmed the collapse and stated that the tailings had reached the community of Vila Ferteco and an administrative office, where employees were present, which indicated the possibility of victims. According to The Associated Press, approximately 200 people were estimated to be missing. As *Reuters* described, a “torrent of sludge tore through the mine’s offices, including a cafeteria during lunchtime.”

205. On this news, share prices of Vale Securities declined in value. Vale ADSs fell \$1.20 per share or over 8% to close at \$13.66 per share on January 25, 2019. However, Vale Securities’ share prices remained artificially inflated after this materialization of the concealed risk and partial disclosure because the full impact of the collapse remained unknown and Defendants continued to conceal and misrepresent material information about their grossly inadequate dam safety management, which led to the Dam 1 failure.

206. **January 28, 2019.** Significant news concerning the Dam 1 breach, its impacts, and investigations continued to emerge over the weekend of January 26-27, 2019, and on Monday January 28, 2019.

207. On Saturday, January 26, 2019, the federal Public Prosecutor’s Office of Brazil (the “MPF”) ordered the formation of a task force to investigate the causes of and responsibility for the dam collapse.

208. In three press releases published late on Sunday, January 27, 2019 (and filed with the SEC on January 28), Vale announced significant further details concerning the Dam 1 collapse and its impacts. Vale stated that 305 people were missing but only confirmed 16 deaths (far less than media reports of 50 or more deaths). Additionally, Vale announced that judges in the courts

of Belo Horizonte and Brumadinho had granted attachments to Vale’s bank accounts in the amount of R\$11 billion (U.S.D. \$2.92 billion) related to the dam rupture. This amount represented almost half of the Company’s available cash flow of roughly \$6 billion. It also informed investors that administrative sanctions were imposed by two regulatory agencies (IBAMA and SUFIS-MG) totaling R\$250 million. Finally, Vale announced that as a consequence of the Dam 1 breach, Vale’s board of directors held an extraordinary meeting on January 27, 2019 at which they suspended the payment of dividends and set up two committees to probe the disaster and oversee recovery efforts. The Company had previously expected to distribute dividends of at least \$4 billion to shareholders in the 2019-2021 period.

209. In reaction to these disclosures, Vale Securities’ share prices declined in value. Vale ADSs dropped by \$2.46, almost 20%, to close at \$11.20 per share on January 28, 2019. Vale Securities’ share prices remained artificially inflated after this partial materialization of the risks concealed by the fraud, however, because Defendants continued to conceal and misrepresent material information about their grossly inadequate dam safety management, which led to the Dam 1 breach. Indeed, in a January 28, 2019 form 6-K filing, Defendants continued to claim that Dam 1 had a Safety Factor that was “*in accordance with the world’s best practices and above the reference of the Brazilian Standard.*”

210. **February 4, 2019.** On February 4, 2019, *Bloomberg* reported that Vale said it was “temporarily halting some operations at its Brucutu mine . . . in compliance with a Brazilian court order issued to help improve safety after one of Vale’s tailings dam in Minas Gerais state collapsed in late January, killing more than 130 people and leveling part of a town.” On this news, Vale Securities’ prices declined in value. Vale ADSs fell by \$0.42, or 3.4%, to close at \$12.15 per share.

211. **February 6, 2019.** After the close of trading on February 5, 2019, it was reported

that Vale would declare a force majeure on certain iron ore supply contracts due to reduced iron ore capacity after the court-ordered suspension of operations at Vale's Brucutu mine.

212. Additionally, on February 6, 2019, *The Guardian* reported that Vale had been forewarned about the likely rupture of Dam 1 in an article, ““That's going to burst’: Brazilian dam workers say they warned of disaster,” set forth, in relevant part, below:

[T]hree mine workers told the Guardian that around July last year, repairs were carried out after the dam leaked water near its base. Another man said his brother – who worked at the mine and is still missing – was so worried about the leak he planned to leave his job.

* * *

Fernando Coelho, 35, lost his father Olavo Coelho, 63, in the disaster. The two men lived together, and both worked at the mine.

Fernando said that around July last year, his father was called in to work at around 10pm one night after a leak was spotted on the lower surface of the dam.

Fernando Coelho, who was working at a nearby ore treatment unit, was asked to find sand and gravel for the repair. He then followed the night’s events on his radio.

“The supervisor found the mud leaking,” he said. “They called for my father, because he had worked his whole life with dams and mines.”

By 4pm the following day, workers had been brought in to fix it and the area had been sealed off. “They did the repair and said there was no problem,” he said.

Coelho broke into tears as he remembered his father warning him to steer clear of the dam. *“That’s going to burst at any time,” he recalled him saying.*

Coelho has related the same events to state prosecutors. A spokesman for prosecutors said they would not comment on an ongoing investigation.

Dam safety experts said that such a leak would mean the dam was not safe.

“A leak like that … would inherently make the dam more unstable,” said David Chambers, an expert on tailings dam failures who co-founded the Center for Science in Public Participation. “Any kind of leak through the face of the dam is significant. It shouldn’t do that if it was working properly.”

* * *

In September, a TÜV SÜD report concluded that the Brumadinho dam was stable. But it

highlighted drainage problems and recommended installing new water pressure monitors. According to Vale, workers were fitting the new monitors on the day the dam burst – over four months later.

José de Gouveia, 53, narrowly survived the disaster because he was working high above the tailings tank in an ore treatment unit. He hung on as it began to fall apart while the sea of mud passed beneath, and eventually crawled out across broken fittings.

“I saw a group of people who ran – but they had no chance, they were overtaken by the mud,” he said. “Workmates beside me slipped and fell and died there.”

Gouveia also saw men working on a leak at the foot of the dam around last July.

“They were containing a little leak soon after the rainy season. It was seeping water in several places at the bottom,” he said.

Luis Castro, 60, who works for Reframax, a subcontracted company, said he saw crews working on the dam after workmates talked about a leak.

“We heard there had been a little water leak, but we didn’t know what the risk could be,” he said.

213. Further, shortly before the close of trading on February 6, 2019, the *Wall Street Journal* reported that Vale was warned by inspectors that “faulty water drainage and monitoring systems represented a potential risk of failure” at Dam 1, stating in relevant part:

Inspectors of Vale Dam in Brazil Issued Warning Before Collapse

Report provided to Brazilian mining company said the structure would be at high risk of failure if it didn’t drain water properly

Inspectors of a Brazilian mining-waste dam whose collapse last month killed at least 150 people had warned its owner that faulty water drainage and monitoring systems represented a potential risk of failure, according to a safety report reviewed by *The Wall Street Journal*.

The report, provided to the mine’s owner Vale SA months before the disaster, found that flaws in monitoring crucial water concentrations and drainage made it difficult for the company to fully assess the dam’s stability.

TÜV SÜD, the company that inspected the dam and wrote a 128-page report for Vale in September, ultimately certified the dam as stable. But two independent mining dam experts who reviewed the report with the Journal said the dam shouldn’t have been certified and Vale should have recognized potential risks.

TÜV SÜD worked as both a consultant and an independent safety inspector for its client. The Journal previously reported that the dual role was a potential conflict of interest. After

the dam collapse, Brazilian authorities arrested three Vale employees and two engineers who worked for TÜV SÜD. An appeals court ordered on Tuesday their release.

214. On this news, Vale Securities' prices declined in value. Vale ADSs dropped by \$0.75, or over 6%, to close at \$11.36 per share on February 6, 2019.

215. As a result of Defendants' false statements and material omissions, Vale Securities traded at artificially inflated prices during the Class Period. After the above disclosures or materializations of the risks concealed by Defendants' fraud, the price of Vale Securities declined significantly as the artificial inflation was removed.

VII. ADDITIONAL ALLEGATIONS OF THE INDIVIDUAL DEFENDANTS' SCIENTER

216. As officers and/or directors of a publicly owned company, the Individual Defendants had a duty to disseminate accurate and truthful information with respect to Vale's business and operations, and to correct promptly any public statements issued by Vale which had become materially false or misleading.

217. The Individual Defendants were able to, and did, control the contents of the various reports, press releases and public filings which Vale disseminated in the marketplace during the Class Period. Such reports, filings, releases and statements were materially false and misleading in that they failed to disclose material adverse information and misrepresented the truth about Vale's operations. Throughout the Class Period, the Individual Defendants exercised their power and authority to cause Vale to engage in the wrongful acts complained of herein. The Individual Defendants therefore, were "controlling persons" of Vale within the meaning of Section 20(a) of the Exchange Act. In this capacity, they participated in the unlawful conduct alleged which artificially inflated the market price of Vale Securities.

218. By reason of their senior management positions and/or being directors of Vale, each of the Individual Defendants had the power to direct the actions of, and exercised the same to

cause, Vale to engage in the unlawful acts and conduct complained of herein. Each of the Individual Defendants exercised control over the general operations of Vale and possessed the power to control the specific activities which comprise the primary violations about which Plaintiff and the other members of the Class complain.

219. By virtue of their positions at Vale, Individual Defendants had actual knowledge of the materially false and misleading statements and material omissions alleged herein and intended thereby to deceive Plaintiff and the other members of the Class, or, in the alternative, Individual Defendants acted with reckless disregard for the truth in that they failed or refused to ascertain and disclose such facts as would reveal the materially false and misleading nature of the statements made, although such facts were readily available to defendants. Said acts and omissions of defendants were committed willfully or with reckless disregard for the truth. In addition, each Individual Defendant knew or recklessly disregarded that material facts were being misrepresented or omitted as described above.

220. The Individual Defendants are liable both directly and indirectly for the wrongs complained of herein. Because of their positions of control and authority, the Individual Defendants were able to and did, directly or indirectly, control the content of the statements of Vale. As officers and/or directors of a publicly-held company, the Individual Defendants had a duty to disseminate timely, accurate, and truthful information with respect to Vale's businesses, operations, and future prospects. As a result of the dissemination of the aforementioned false and misleading reports, releases and public statements, the market price of Vale Securities was artificially inflated throughout the Class Period. In ignorance of the adverse facts concerning Vale's business and financial condition which were concealed by defendants, Plaintiff and the other members of the Class purchased or otherwise acquired Vale Securities at artificially inflated

prices and relied upon the price of the securities, the integrity of the market for the securities and/or upon statements disseminated by Defendants, and were damaged thereby.

VIII. CLASS ACTION ALLEGATIONS

221. Plaintiff brings this Action as a class action pursuant to Rule 23 of the Federal Rules of Civil Procedure on behalf all persons who purchased on the NYSE or other U.S. exchanges or in a U.S. transaction between July 28, 2016 and February 6, 2019, inclusive (the “Class Period”), any of the following publicly-traded Vale securities: (1) Vale ADSs; (2) 5.875% Guaranteed Notes due 2021; (3) 4.375% Guaranteed Notes due 2022; (4) 6.250% Guaranteed Notes due 2026; (5) 8.250% Guaranteed Notes due 2034; (6) 6.875% Guaranteed Notes due 2036; (7) 6.875% Guaranteed Notes due 2039; or (8) 5.625% Notes due 2042 (the “Class”). Excluded from the Class are: (i) Defendants; (ii) members of the immediate family of any Defendant who is an individual; (iii) any person who was an officer or director of Vale during the Class Period; (iv) any firm, trust, corporation, or other entity in which any Defendant has or had a controlling interest; (v) Vale’s employee retirement and benefit plan(s) and their participants or beneficiaries, to the extent they made purchases through such plan(s); and (vi) the legal representatives, affiliates, heirs, successors-in-interest, or assigns of any such excluded person.

222. The members of the class are so numerous that joinder of all members is impracticable. The disposition of their claims in a class action will provide substantial benefits to the parties and the Court. The estimated publicly-held float of Vale Securities during the Class Period is well over one billion shares.

223. There is a well-defined community of interest in the questions of law and fact involved in this case. Questions of law and fact common to the members of the Class which predominate over questions which may affect individual Class members include:

- a. Whether the Exchange Act was violated by Defendants;

- b. Whether Defendants omitted and/or misrepresented material facts;
- c. Whether Defendants' statements omitted material facts necessary to make the statements made, in light of the circumstances under which they were made, not misleading;
- d. Whether the Defendants acted with the requisite state of mind;
- e. Whether the price of Vale Securities was artificially inflated; and
- f. The extent of damage sustained by Class members and the appropriate measure of damage.

224. Plaintiff's claims are typical of those of the Class because Plaintiff and the Class sustained damages from the Defendants' wrongful conduct.

225. Plaintiff will adequately protect the interests of the Class and has retained counsel who is experienced in class action securities litigation. Plaintiff has no interests which conflict with those of the Class.

226. A class action is superior to other available methods for the fair and efficient adjudication of this controversy.

IX. PRESUMPTION OF RELIANCE

227. Plaintiff will rely upon the presumption of reliance established by the fraud-on-the-market doctrine in that, among other things:

- a. Defendants made public misrepresentations or failed to disclose material facts during the Class Period;
- b. The omissions and misrepresentations were material;
- c. Vale's Securities traded in an efficient market;
- d. The misrepresentations alleged would tend to induce a reasonable investor to misjudge the value of the Vale's Securities; and

e. Plaintiff and other members of the Class purchased Vale Securities between the time Defendants misrepresented or failed to disclose material facts and the time the true facts were disclosed, without knowledge of the misrepresented or omitted facts.

228. At all relevant times, the market for Vale Securities was efficient for the following reasons, among others:

- a. As a regulated issuer, Vale filed periodic public reports with the SEC;
- b. Vale regularly communicated with public investors via established market communication mechanisms, including through regular disseminations of press releases on the major news wire services and through other wide-ranging public disclosures, such as communications with the financial press, securities analysts, and other similar reporting services;
- c. Vale was followed by several securities analysts employed by major brokerage firm(s) including, among others: (1) Credit Suisse; (2) UBS Securities LLC; (3) Bank of America Merrill Lynch; (4) Morgan Stanley; (5) JP Morgan; (6) Deutsche Bank; and (7) Goldman Sachs, and which wrote reports which were distributed to those brokerage firms' sales force and certain customers and which were publicly available and entered the public marketplace; and
- d. Vale Securities were actively traded in an efficient market, the NYSE, where the Company's ADSs trade under the ticker symbol "VALE."

229. As a result of the foregoing, the market for Vale Securities promptly digested current information regarding Vale from all publicly available sources and reflected such information in Vale Securities. Under these circumstances, all purchasers and acquirers of Vale

Securities during the Class Period suffered similar injury through their purchases or acquisitions of Vale Securities at artificially inflated prices, and the presumption of reliance applies.

230. Further, to the extent that Defendants concealed or improperly failed to disclose material facts with regard to the Company and its operations, Plaintiff is entitled to a presumption of reliance in accordance with *Affiliated Ute Citizens of Utah v. United States*, 406 U.S. 128 (1972).

X. NO SAFE HARBOR

231. The statutory safe harbor provided for forward-looking statements under certain circumstances does not apply to any of the allegedly false statements pleaded in this complaint. Many of the specific statements pleaded herein were not identified as “forward-looking statements” when made. To the extent there were any forward-looking statements, there were no meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the purportedly forward-looking statements. Alternatively, to the extent that the statutory safe harbor does apply to any forward-looking statements pleaded herein, Defendants are liable for those false forward-looking statements because at the time each of those forward-looking statements was made, the particular speaker knew that the particular forward looking statement was false, and/or the forward-looking statement was authorized and/or approved by an executive officer of Vale who knew that those statements were false when made.

XI. CLAIMS FOR RELIEF

COUNT I

For Violation of Section 10(b) of the Exchange Act and Rule 10b-5(b) Against All Defendants

232. Plaintiff repeats and realleges each and every allegation contained above as if fully set forth herein.

233. During the Class Period, Vale and the Individual Defendants disseminated or approved the false statements specified above, which they knew or recklessly disregarded were materially false and misleading in that they contained material misrepresentations and failed to disclose material facts necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading.

234. Vale and the Individual Defendants violated Section 10(b) of the Exchange Act and Rule 10b-5 in that they:

- a. Employed devices, schemes and artifices to defraud;
- b. Made untrue statements of material facts or omitted to state material facts necessary in order to make statements made, in light of the circumstances under which they were made, not misleading; or
- c. Engaged in acts, practices, and a course of business that operated as a fraud or deceit upon Plaintiff and others similarly situated in connection with their purchases of Vale Securities during the Class Period.

235. Plaintiff and the Class have suffered damages in that, in reliance on the integrity of the market, they paid artificially inflated prices for Vale's publicly traded Securities. Plaintiff and the Class would not have purchased Vale Securities at the prices they paid, or at all, if they had been aware that the market prices had been artificially and falsely inflated by the Defendants' misleading statements.

236. As a direct and proximate result of the wrongful conduct of Vale and the Individual Defendants, Plaintiff and the other members of the Class suffered damages in connection with their purchases of Vale Securities during the Class Period.

COUNT II

For Violations of Section 10(b) of the Exchange Act and Rule 10b-5(a) & (c) Against All Defendants

237. Plaintiff repeats and realleges each and every allegation contained above as if fully set forth herein.

238. During the Class Period, Defendants violated Rules 10b-5(a) and (c) in that they employed devices, schemes and artifices to defraud and engaged in acts, practices and a course of business that operated as a fraud or deceit upon Plaintiff and others similarly situated in connection with their purchases of Vale Securities during the Class Period as alleged herein.

239. During the Class Period, Defendants participated in the preparation of and/or disseminated or approved the false statements specified above, which they knew or deliberately disregarded were misleading in that they contained misrepresentations and failed to disclose material facts necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading.

240. Defendants made untrue statements of material facts or omitted to state material facts necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading. Defendants individually and together, directly and indirectly, by the use, means or instrumentalities of interstate commerce and/or the mails, engaged and participated in a continuous course of conduct to conceal the truth and/or adverse material information about the business, operations and future prospects of Vale as specified herein.

241. Defendants had actual knowledge of the misrepresentations and omissions of material fact set forth herein, or recklessly disregarded the true facts that were available to them. Defendants' misconduct was engaged in knowingly or with reckless disregard for the truth, and

for the purpose and effect of concealing Vale's true dam safety management and dam-related risks from the investing public and supporting the artificially inflated price of Vale Securities.

242. Plaintiff and the Class have suffered damages in that, in reliance on the integrity of the market, they paid artificially inflated prices for Vale Securities. Plaintiff and the Class would not have purchased Vale Securities at the prices they paid, or at all, had they been aware that the market prices for the Securities had been artificially inflated by the materially false and misleading statements and omissions alleged herein.

COUNT III

For Violation of Section 20(a) of the Exchange Act Against Individual Defendants

243. Plaintiff repeats and realleges each and every allegation contained above as if fully set forth herein.

244. The Individual Defendants acted as controlling persons of Vale within the meaning of Section 20(a) of the Exchange Act as alleged herein. By virtue of their high-level positions, participation in and awareness of the Company's operations, and knowledge of the statements filed by the Company with the SEC and disseminated to the investing public, the Individual Defendants had the power to influence and control and did influence and control, directly or indirectly, the decision-making of the Company, including the content and dissemination of the various statements which Plaintiff contends are false and misleading. The Individual Defendants were provided with, or had unlimited access to copies of, the Company's reports, press releases, public filings and other statements alleged by Plaintiff to be misleading prior to and/or shortly after these statements were issued and had the ability to prevent the issuance of the statements or cause the statements to be corrected.

245. In particular, the Individual Defendants had direct and supervisory involvement in the day-to-day operations of the Company and, therefore, are presumed to have had the power to control or influence the particular transactions giving rise to the securities violations as alleged herein, and exercised the same.

246. As set forth above, Vale and the Individual Defendants each violated Section 10(b) and Rule 10b-5 by their acts and omissions as alleged in this Complaint. By virtue of their positions, each as a controlling person, the Individual Defendants are liable pursuant to Section 20(a) of the Exchange Act. As a direct and proximate result of Vale's and the Individual Defendants' wrongful conduct, Plaintiff and the other members of the Class suffered damages in connection with their purchases of Vale's Securities during the Class Period.

XII. PRAYER FOR RELIEF

247. **WHEREFORE**, Plaintiff prays for judgment as follows:

- a. Declaring the action to be a proper class action pursuant to Fed. R. Civ. P. 23;
- b. Awarding Plaintiff and the members of the Class damages, including interest;
- c. Awarding Plaintiff's counsel reasonable costs and attorneys' fees; and
- d. Awarding such equitable/injunctive or other relief as the Court may deem just and proper.

XIII. JURY DEMAND

248. Plaintiff demands a trial by jury.

Dated: October 25, 2019

/s/ Frederic S. Fox

KAPLAN FOX & KILSHEIMER LLP

Frederic S. Fox

Donald R. Hall
Jeffery Campisi
850 Third Avenue, 14th Floor
New York, NY 10022
Telephone: (212) 687-1980
Facsimile: (212) 687-7714

Lead Counsel for Plaintiff and the Class